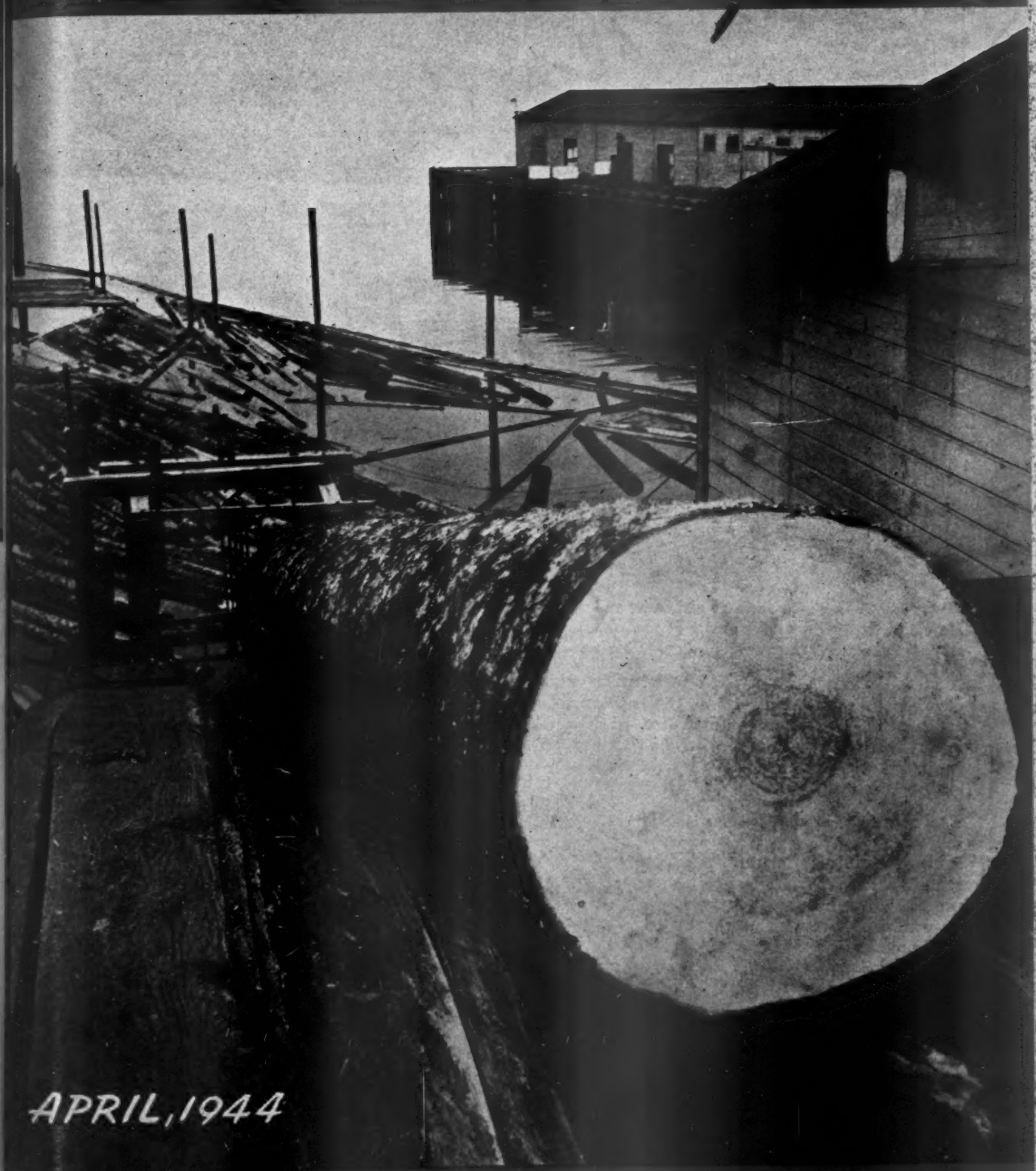
PROPERTY OF THE
PULP & PAPER LIBRARY

Pacific Pulp & Paper Industry

The Cellulose Age

No. 4



APRIL, 1944

HERE IS "BRIGHTEST SPOT IN A GLOOMY U. S. PULP PICTURE"—

...of Commencement Bay, Tacoma, Wash., turn again are being fed into big St. Regis pulp mill after 17 months shutdown. It could not be done, said prescarrers, but St. Regis did it! See Pages 6 and 7.

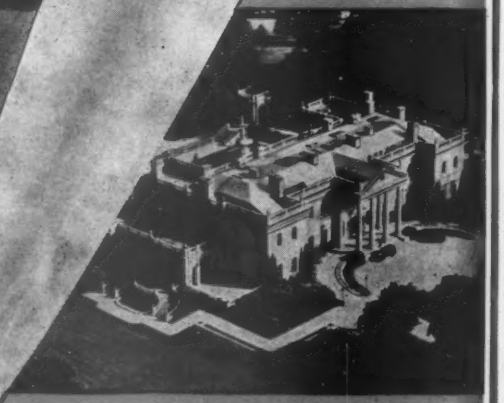
Research showed that

CAGLIOSTRO HAD THE RIGHT IDEA

Cagliostro was an alchemist and magician. He claimed to possess the secret of the philosopher's stone—to be able to transmute baser metals into gold.

A fantastic idea? Not at all. The scientists who developed the cyclotron have made the transmutation of metals an accomplished fact. Modern research, following the trail of the alchemist, can break down barriers within an atom and change it into another element.

The atom-smasher is another signal achievement in the bright record of research. It is by such brilliant advances that science steadily encourages and supports the progress of industry—thus helping to produce better products by better methods, and so creating a fuller and finer way of life for everyone.



WHITEMARSH RESEARCH LABORATORIES

WITH the growth of the Research and Development Department of Pennsylvania Salt Manufacturing Company has come the need for larger quarters and greater facilities. As a consequence, Penn Salt has acquired for use as a new center of research, famous Whitemarsh Hall, near Philadelphia. A large staff of chemists, engineers and other technologists at Whitemarsh Hall will devote their abilities to scientific study—and as a result of their findings, we shall hope to bring you new and improved products and service.

FORWARD TO A BETTER FUTURE WITH RESEARCH

PENNSYLVANIA SALT MANUFACTURING CO. OF WASHINGTON

Chemicals

TACOMA, WASHINGTON

Pacific Pulp & Paper Industry is published once a month, at 71 Columbia St., Seattle, Wash. Subscription: U. S., $4.00; Canada, $4.50; other countries, $5.00. Entered as second class matter May 20, 1927, at the Postoffice at Seattle, under the Act of March 3, 1879. Copyright, 1943, by Miller Freeman Publications.

Pacific PULP & PAPER Industry

The Journal of the Pacific Coast Industry

APRIL • 1944

Vol. 18 No. 4

MILLER FREEMAN
President

LAWRENCE K. SMITH
Manager

ALBERT WILSON
Editor

KEMPER FREEMAN
Production Manager

MILLER FREEMAN, JR.
Circulation Manager

PUBLISHING OFFICE
71 Columbia St.
Seattle 4, Wash.
Tel. MAin 1626

OTHER OFFICES
Chester A. Fee
Associate Editor
1220 S. W. Morrison St.
Portland 5, Ore.
Tel. AT. 9593-9594

Stuart Leete
121 Second St.
San Francisco 5, Calif.
Tel. GA. 5887

Arthur Ponsford
124 W. Fourth St.
Los Angeles 13, Calif.
Tel. MUtual 5857

Charles L. Shaw
675 W. Hastings St.
Vancouver, B. C.
Tel. Marine 1520

SUBSCRIPTION RATES

United States	$4.00
Canada	$4.50
Other Countries	$5.00
Single Copies	$ .35
Review Number	$1.00

PAGE MR. RIPLEY

Editorials

BELIEVE it or not, pulp and paper is more critical today in war production than copper and steel!

The War Products Development Section of the Paper Division, War Production Board, which spent many months developing new uses for paper and paper substitutes for other materials, has been disbanded. Now the WPB actually is trying to find other materials to substitute for paper!

WPB Director Donald Nelson says lumber and pulp and paper are now our most vital and critical war products.

The WPB recently ordered the use of steel 5-gallon drums for paint and varnish instead of fiber or wooden containers which had been successfully developed.

Not long ago the WPB directed a large pulp company to use steel frames instead of wood in some new equipment. This particular directive later was reversed but the reason for it still stands—wood and pulp and paper, too, top the list today in essential war products.

STATE OF THE INDUSTRY

SEEN and heard on a seven weeks' tour of the pulp and paper industry centers of the country—a tour that not only took in the big cities but visits to 16 representative pulp and paper mills in the famous valleys of the Delaware, Connecticut, Upper Hudson, Black and Kalamazoo Rivers and along Lake Ontario:

Many mills are fighting to keep going, with the most acute shortages of wood, pulp, waste paper, other materials and manpower still ahead of them. Some 29 plants of various descriptions are reported to have closed, many, we hope, just temporarily.

Many eastern mills—and WPB officials, too—are counting on Pacific Coast pulp production to pull the industry through its most serious days ahead—what the doctors call the "crisis."

"The brightest spot in a gloomy U. S. pulp picture"—according to the Paper Division and Forest Products Bureau officials of the WPB—is the reopening of the St. Regis kraft mill in Tacoma, Wash., bringing a new supply of 7,000 tons a month of unbleached sulphite to the hungry mills swamped with army and navy and government orders for more and more overseas containers and wrapping.

Those pulp and paper industries that weather this year of trial—probably the toughest in the industry's history—have an extraordinary vision of a postwar "paper and cellulose age" dangling before them. Everywhere, management in the industry is thinking and talking about this vision. In our Annual May Review Number—next month—we hope to give you a preview of it.

But to get back to the hard realities:

NORTHEASTERN STATES

The most critical area in the industry today. A number of mills there are just hanging on by their teeth. Their inventories are down to bedrock. They are in a high tax area. Their wood costs per ton of pulp are about twice as much as in bigger western mills. They are in a highly industrialized area and if they lose their labor, in shutdowns, the question is: Can they ever hope to get the labor back? Now management is asking: Was the War Production Board's policy of pressing for production last year and using up inventories a wise one? That policy seems to have put the New England industry squarely behind the eight ball.

THE SOUTH

Short of inventory in wood, too, and the position of their mills is equally dangerous. One big southern mill, forced to close for a week, put its crew to washing windows, cleaning up, etc., in order not to lose the crew. Right now the Paper Division of the WPB is doing everything possible to get 500,000,000 feet of pulpwood, blown down in an eastern Texas hurricane, into nearby mills before it rots in the hot southern summer. But labor and trucks are hard to get; even prisoners of war. Rising labor costs are wiping out an important advantage the South had enjoyed for the past two decades

of rapid expansion of its paper industry.

Brightest spot in the South is the opening of the new kraft mill at Lufkin, Texas, by the Southland Paper Company, makers of newsprint. It makes 3,000 tons a month of unbleached sulphite and in a Michigan mill we saw one of the first deliveries of this pulp.

THE LAKE STATES

On the whole, conditions here are better than in any other part of the country. Larger, integrated mills have 18 months to two years supply of wood. But here, as in the east, the book mills and producers of finer grade papers are on four or five day weeks, with many machines shut down for lack of supplies.

PACIFIC COAST

In many eastern mills where great storerooms used to be filled with pulp with the stamp of western companies, there are now great open spaces or what pulp is to be seen, are the inferior qualities from Canadian newsprint mills which never contemplated such a market. But a mild winter and increased pulpwood and pulp prices for the Pacific Coast have encouraged the WPB and eastern industry to expect an upturn in western production of market pulp. As a matter of fact, the pulpwood situation is slowly but gradually improving on the Pacific Coast.

Added to St. Regis' 7,000 tons a month of unbleached sulphate, an increase of sulphite production has been made possible. The easing wood situation has permitted further utilization of capacities of Pacific Northwest mills producing sulphite and may bring up production by a few thousand tons a month. However, a large proportion of the bleached sulphite capacity is still going to the eastern arsenals for manufacture into smokeless powder.

MORE OBSERVATIONS

Here are more observations on the tour:

Eastern mills which used to use 25 per cent rags are now using 50 per cent, making up for lack of pulp. Those that used 65 per cent rags are now using up to 85 per cent.

In one eastern mill yard we saw a shipment of 5,000 cords of Russian spruce with inner bark on. More of these shipments are expected in returning empty boats carrying war provisions eastward. In another one of the biggest eastern mills, it was stated that Russian wood was the best kind they had ever had for pulp.

There are many rumors to be heard in Washington and other pulp and paper industry centers. But here are reports that seemed to have the most support of responsible authority:

More sulphite pulp and papers will go into packaging.

Many pulp and paper mills will be asked during 1944 to make products they have never made before.

Domestic use of wrapping and packaging is going to be cut by 50 per cent. Second hand containers will start to arrive in the grocery stores and retail stores.

As the army and navy and lend-lease demands for paper increase—and they are now increasing steadily—the paper available for civilian use will gradually decrease. The army and navy and government will have what it wants. For the civilian, accustomed to plenty of paper for many uses, 1944 is going to be a tough year.

MORE MATERIALS FOR MILL MACHINERY

A GREAT many pulp and paper companies, as well as the manufacturers of pulp and paper machinery, are still not quite certain what the attitude of the War Production Board is toward releases of new equipment or the building of new units to their plants. That these doubts continue are not surprising. The WPB officials themselves have not been very specific. Perhaps they couldn't be under the fluctuating conditions of war.

A representative of PACIFIC PULP & PAPER INDUSTRY spent several days in Washington, D. C., recently, talking with the officials of the Forest Products Bureau and its branch, the Paper Division. These are the officials who decide virtually all the problems of the pulp and paper industry today.

Here's the picture we got of the situation:

The final criterion in most cases in deciding whether a pulp and paper mill gets a certain piece of new equipment is whether the product of the mill is essential. The pulp producers are going to be helped as much as possible—pulp is urgent. The paper mills making condensing paper, wrapping, waterproof papers and paperboard of all kinds will have the edge over the other fellows. They are making what Uncle Sam wants most urgently.

As for the construction of new units, there is a critical shortage of unbleached sulphate. Some mills may start building before the war is over. But if any pulp mills are built in Canada with the assistance of the WPB, it is asserted, they must produce pulp for the U. S. industry. Generally, it is believed in Washington, that extensive mill construction is not necessary if the existing mills can get more wood.

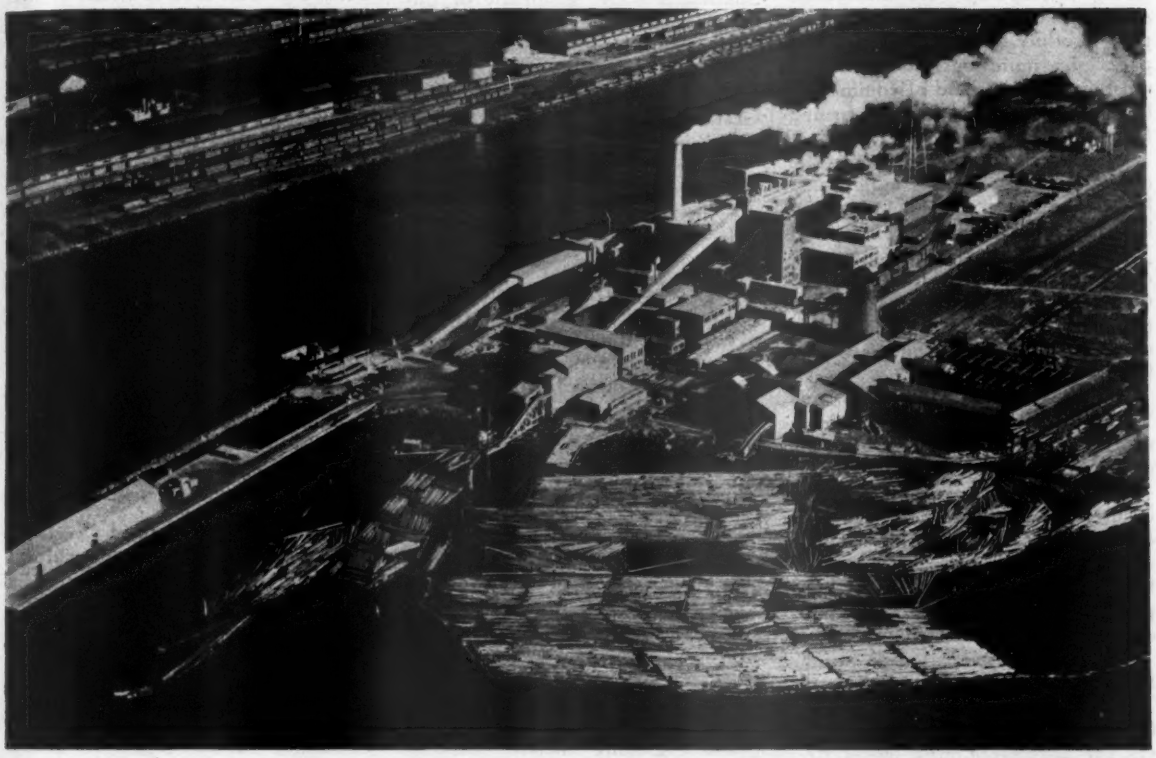
Aside from farm machinery, the only other industry getting releases on machinery and equipment to any extent is the pulp and paper industry. This industry is being favored because pulp and paper have suddenly become of prime importance in carrying on the war. It is actually true that aside from milking machines and similar releases allowed for supplies and equipment for farmers, the only other industry benefitting by any important relaxation of priorities on materials is the pulp and paper industry.

WPB officials insist that while the pulp and paper industry is being favored, there is no re-conversion going on or contemplated. All manufacturers of pulp and paper mill equipment have been going full speed at about 99 per cent capacity on war work for shipyards, tank factories or aircraft plants. But now—to do work for pulp and paper mills—they only have to change the names on their orders. They can go right ahead doing pulp and paper mill jobs with the same machines which have been engaged in emergency war work. Therefore, say the WPB men, there is no reconversion.

In doing work for mills this quarter, the machinery manufacturers must not exceed 40 per cent of the dollar value of the work they did for the mills in the first half of 1941. There are a couple of reservations, however—they can't add labor or plant space and they must keep up with all war orders. That will mean that most of them will not be able to come anywhere near the quota limit.

Mills that want equipment to save wood or to obtain higher yields of pulp will get a sympathetic hearing. In the light of new conditions, mills are encouraged to ask for reconsideration of requests turned down in the past two years.

ST. REGIS KRAFT MILL REOPENS; U. S. Officials Regret Long Shutdown



KRAFT PULP DIVISION, ST. REGIS PAPER COMPANY, on Commencement Bay, Tacoma, Wash. After a 17-months shutdown, this mill has been started up again to help meet a critical shortage of unbleached sulphate pulp, urgently needed by the Army, Navy and lend-lease for packaging material. This picture was taken before Pearl Harbor (military censorship forbids air views taken after that date). The tall building, shown here, was the housing for four digesters. It has since been extended to the right to house two more digesters. The boiler house also has been slightly enlarged, with a fourth boiler added, and a Combustion Engineering unit has been added. Usually there is a better showing of logs in the bay.

ALL through 1942 the odds were strong against the chances that the Kraft Pulp Division of St. Regis Paper Company at Tacoma, Wash., would reopen before the war emergency was over. According to practically all the experts —or, at least every one that voiced an opinion—it just wasn't in the cards. It couldn't be done.

One man refused to accept this verdict. There were some who refused to take seriously his persistent efforts to get logs and reassemble the scattered employes. They scoffed at his efforts and they seemed to have sufficient reason to scoff—weren't the wood and manpower shortages in the Tacoma area the most critical in the entire country? How could any pulp mill get started again under such depressing conditions?

But Walter DeLong, vice president and general manager of the Tacoma Division of St. Regis, wouldn't quit trying.

In the closing weeks of 1943, Roy Ferguson, president of the St. Regis Company, surprised a great many wiseacres by announcing one of the biggest timber deals of recent years. Mr. Ferguson, who loyally encouraged and supported Mr. DeLong in his campaign to reopen the mill, announced that St. Regis had acquired one of the last great commercially-available stands of timber in the United States.

A "perpetual" source of timber had been acquired, consisting of 45,000 acres of West Fork Timber Company lands in Lewis County, Washington, and 65,000 acres of timber on adjacent public lands, and also all logging equipment of the West Fork Logging Company. Mr. DeLong had figured in what might conservatively be described as a "ten-strike" and on the deal he brought his friend, L. T. Murray, president of the West Fork Timber and Logging Companies, into the St. Regis organization as an advisor on logging operations.

Meanwhile, official Washington was beginning to regret the St. Regis closing of Nov. 1, 1942—the result of a War Production Board log allocation order arising out of the critical log shortage on Puget Sound. Two other Puget Sound mills had been shut down on that date by the order, one being since dismantled and the other, the smaller Scott subsidiary mill at Anacortes, having reopened last fall.

Washington Attitude

● By late 1943, there were many new WPB officials with authority over the pulp and paper industry. Their ideas were somewhat different than some of the WPB officials of 1942, who had talked of closing even more mills and eliminating whole categories of paper production. By the end of 1943, pulp and paper were

recognized as vital to the war effort —vital to all hopes of victory over the Axis nations. More than that, the army and navy, lend-lease and other war agencies were frantically trying to scrape up more unbleached sulphate—the most critical type of pulp produced. It was needed for packaging munitions, food and almost every other kind of commodity being shipped abroad to our armed forces and our allies.

They were frankly sorry for the closing of the St. Regis mill, which had a capacity of 325 tons unbleached sulphate daily.

James Madden, new aggressive chief of pulpwood production for the WPB, said: "In retrospect we realize how serious a mistake it was to shut down the mills on the Pacific Coast in 1942."

Donald Nelson, WPB chief, said: "Pulp and paper, with lumber, have now become the most critical items of war production in the country."

To the amazement of officials and industry leaders alike, the third year of American participation in the war began with pulp and paper officially recognized as even more important to victory than steel and copper!

And so it was decided to permit St. Regis to reopen its big pulp mill. Then some Washington officials admitted they mumbled fervent prayers for Mr. De Long. To a PACIFIC PULP & PAPER INDUSTRY representative, on an editorial trip to Washington, D. C., last month, they asked: "Can he get the mill started?" "Can he get the labor back?" "How are things going in Tacoma?"

You bet, they wanted the machines rolling in St. Regis' mill again. Quite an about-face from the attitude of late 1942, when pulp and paper was considered about as essential to the war effort as ballet dancing.

Reopened March 27

● Finally, on March 27, the Tacoma mill began making pulp again. Mr. DeLong at long last had won his fight.

Rex Hovey, head of the WPB Paper Division, David Graham, the pulp allocations director for the WPB, Mr. Madden and others in official Washington joined in calling the Tacoma mill "the brightest spot in a gloomy U. S. pulp picture."

The nation at war moved into the second quarter of 1944 with unbleached sulphate even more critical than it had been in any previous quarter. Paper Division officials were fighting on all fronts to get more wood and more production for the mills. The army and navy demands for kraft packaging was increasing alarmingly.

Happily for all concerned, the Southland Paper Company of Lufkin, Texas, got its new unbleached sulphate mill into production. Its production, however, is less than half that of the Tacoma mill. David Graham said these were "two bright spots" in a very unpleasant outlook. There was no doubt when the bigger Tacoma mill got going, where the "brightest spot" in the nation's pulp and paper industry was located.

Everywhere the representative of this magazine went during an extensive tour of midwest and far eastern paper mill centers, there was one transcendent and of-repeated question: "Who's going to get the St. Regis pulp?" — which is quite sufficient testimony as to the national importance of the opening of this mill. Here's the answer to that question:

The Tacoma mill is starting out producing 275 tons daily of unbleached sulphate. Not too strong a pace — can't eat up the precious wood too fast. Uncle Sam will be satisfied with 21,000 tons for the second quarter from Tacoma. The allocations committee in Washington and their guiding officials will decide what mills will get that pulp. It is a good guess that a large proportion will go to midwest paper mills because of their proximity. St. Regis' own paper mills in the east may get little or none. That's the allocations committee's secret.

Bleach Plant Shut Down

● The bleach plant at the Tacoma mill will be shut down until, and when, the WPB says it wants bleached sulphate. Right now, unbleached sulphate is the crying need of the country.

Logs are coming into the mill from various sources. Those from the newly acquired West Fork holdings come 40 miles by railroad from Mineral, Wash. Crews on the West Fork stands are logging in ten inches of snow. This is one the lower humps of Mt. Rainier. A month ago they were logging in 15 inches of snow. The West Fork stands will supply 60,000,000 ft. (107,200 cords) of pulpwood per year to Tacoma.

At the mill, six digesters and the two 126-inch trim Fourdinier Flakt driers are in operation. Crews totaling 300 employes are working a six-day week.

Mr. DeLong, very pleased, stated that the great majority of employes who were on the job in 1942 have come back. Now that their jobs are regarded as essential, they came back to protect their seniority rights. Shipbuilding and machine shops and other war industries in Tacoma and vicinity are paying high wartime wages, but still Mr. DeLong got his old crews back. The release of several thousand employes from Tacoma shipyards in the past few months helped out the situation. But a campaign for 8,000 new employes by the Bremerton Navy Yard across Puget Sound, the actions of government agencies in funneling more workers into the Seattle and Renton airplane factories and the heavy drain of the soldier draft itself made re-manning of the St. Regis plant a plenty tough job.

Photos of the operations and office directors and supervisors of the Tacoma Kraft Division are shown accompanying this article.

Mill Personnel

● Herman Gevers is consultant and advisor to Mr. DeLong. Mr. Gevers has had 34 years of experience in the production end of the industry. He was mill superintendent or held other supervisory posts in mills in Michigan, Maine, Vermont, Wisconsin, Washington and British Columbia. He was consultant at the Port Mellon, B. C., Sorg Company mill and for many years he was with the Longview Fibre Company, Longview, Wash.

Two superintendents who will jointly direct operations of the mill are A. C. McCorry and James Ruck. Mr. McCorry will direct the cooking, washing and drying division and Mr. Ruck the recovery department.

Mr. McCorry was with St. Regis for six and one-half years before the shutdown. Before that, he was with Longview Fibre Co. nine and one-half years and the Ontonagon Fibre Co., of Ontonagon, Mich., for two years.

Mr. Ruck was in the Tacoma mill from the time it was built and opened as a 120-ton sulphate pulp mill in 1928 until a little over two years ago when he went to Howland, Maine, to join the Northern Kraft Co.

Two others who have been in the Tacoma mill since 1928 through its period as a Union Bag mill and later as a St. Regis unit, are:

J. M. Lamb, purchasing agent.

E. J. "Opie" Hayes, office manager. Mr. Hayes, during the mill shutdown, spent that period in Se-

THESE ARE THE MEN AND WOMEN WHO GOT THE ST. REGIS KRAFT MILL IN TACOMA GOING AGAIN—FILLING CRITICAL WAR NEEDS FOR UNBLEACHED SULPHITE PULP. Most of them came back to old jobs, even though they live in one of the busiest war industry regions in the whole nation.

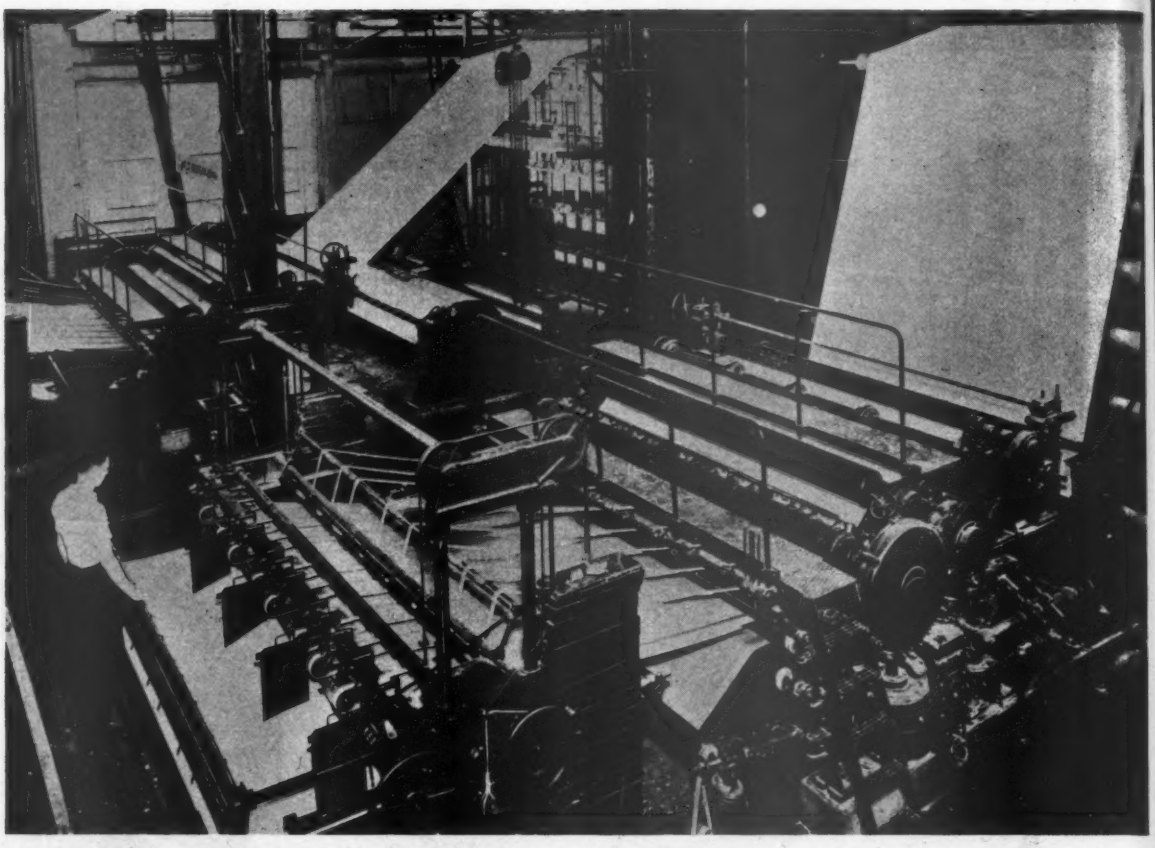
Top row (left to right): A. C. McCORRY, one of two Operations Superintendents; HERMAN GEVERS, veteran Consulting Engineer and Advisor to Mr. DeLONG; PAUL HOLMES, Chief Engineer, and L. O. REISINGER, Personnel Director.

Second row (left to right): J. A. REEDER, Traffic Manager; W. H. DAVIS, Log Buyer; IVAN GINGRICH, Chief Accountant; JAMES RUCK, one of two Operations Superintendents, and ALLEN M. CADIGAN, Chief Chemist.

Third row (left to right): J. M. LAMB, Purchasing Agent; WALTER DeLONG, Vice President and General Manager, and E. J. HAYES, Office Manager.

Lower row (left to right): WAYNE OJA, Engineer; W. J. THOMAS, Chief Electrician; the Office Girls (see names below); CHARLES MUNT, Master Mechanic, and CHARLES ANDERSON, Yard Superintendent. (BERT DOOLITTLE, Sawmill Superintendent, was not at the mill when these pictures were taken).

Lower center group individuals: Front row (left to right): LOUISE LIND, GLADYS CROOKS, SHIRLEY WILSON. Back row (left to right): MILDRED HARDING, SADIE McFADDEN, SALLY RANCIPHER, FLORENCE FEWELL and LOTTIE PIETY. The last one on the right, LOTTIE PIETY, is Mr. DeLONG's Secretary.



PULP MACHINES AT THE KRAFT PULP DIVISION, St. Regis Paper Co., Tacoma, Wash. These two 126-inch trim Fourdrinier Flakt driers have started rolling again after a 17-months shutdown. War Production Board officials in Washington said they now realize that it was a serious mistake to have shut down the Tacoma mill.

attle as Pacific Northwest representative of the Paper Division of the WPB.

Others of the new mill staff, mostly returned employes:

Allen M. Cadigan, chief chemist.
Paul Holmes, chief engineer.
Bert Doolittle, sawmill superintendent.
W. J. Thomas, chief electrician.
Charles Munt, master mechanic.
Wayne Oja, engineer.
J. A. Reder, traffic manager.
W. H. Davis, log buyer.
Ivan Gingrich, chief accountant.
L. O. Reisinger, personnel manager.

Lottie Piety, secretary to Mr. DeLong.

St. Regis bought the Tacoma mill from Union Bag Company in 1931. The mill was remodeled and the bleaching plant added in 1936.

Ossian Anderson, as vice president of the St. Regis Company, was the active director of the Tacoma mill operations, until his sudden death, Sept. 21, 1942, in a Vancouver, B. C., hotel. Mr. Anderson, also the president of Puget Sound Pulp & Timber Co., of Bellingham, Wash., was one of the most colorful and aggressive figures of the pulp and paper industry. His mill manager in Tacoma was Niles Anderson, who after the St. Regis shutdown, joined the Marathon Paper Mills and is now vice president and manager of the Marathon Paper Mills of Canada, Toronto, Canada. He is busily engaged in laying plans for construction of a big new kraft mill in Ontario.

Mr. DeLong, who for many years had been a close associate of Mr. Anderson, became vice president of the Bellingham company on the latter's death. But a month later, on October 15, he was elected vice president of St. Regis Paper Company and resigned his Bellingham position. This was just a week before the WPB order withholding logs from the St. Regis and Rayonier mills in Tacoma and the Scott mill in Anacortes — issued on Oct. 24, 1942—and forcing the shtudown of those mills on November 1.

It was a 17-months long fight from that date before Mr. DeLong was able to reopen the mill.

St. Regis Offers Employes Stock

President Ferguson of the St. Regis Paper Co. submitted a new plan of organization and capitalization at the annual meeting of stockholders April 14 in Watertown, N. Y. It included a plan to sell 250,000 shares of $5 par common stock to employees and to create 200,000 shares of $50 par cumulative five per cent prior preferred stock and to reclassify of the present outstanding seven per cent cumulative preferred into shares of $100 par second preferred.

The following directors were re-elected at this meeting: Roy K. Ferguson, Carl B. Martin, Ralph B. Maltby, W. H. Versfelt, Joseph A. Quinlan, Jonathan O. Bulkley, William K. Dick, H. Edmund Machold, Harry S. Lewis, T. H. Cosford, Walter De Long, M. F. Ford, C. R. Mahaney.

Net sales, royalties and rentals for 1943 were $25,527,784 compared with $28,602,828 in 1942. The enforced shtudown of the Tacoma mill adversely affected the company's business last year. In 1943 the consolidated net income of the company before provision for federal and foreign income and excess profits taxes amounted to $2,951,718.01 compared with $3,066,031.12 in 1942. After deduction of the above taxes the net income available for distirbution as dividends and surplus was $1,855,927.34 compared with 1,680,091.50 in 1942. Purchases of Taggart shares at $5 each during the past year brought the St. Regis holdings of that stock to 587,949 shares out of a total of 816,633 as compared with 339,253 shares in 1942.

Expert Doubts That Swedes Can Export Pulp to U. S. on Former Huge Scale

By ERIC G. LAGERLOEF*

• When the European phase of the war has come to an end, there may well be a very heavy demand for woodpulp and paper, greatly exceeding supplies. The liberated countries will be anxious to import the goods necessary for rehabilitation and to build a foundation for future trade. If Sweden retains its neutrality it will probably have to carry a very heavy supply burden in the international lumber, cellulose, and paper trade markets for some time, until Norway, Finland and Continental manufacturing services begin to offer any appreciable quantities in the world markets.

World markets after the war and resumption of Sweden's exports to the United States and Great Britain are subjects of great interest at the present time. Sweden's capacity for supplying the needs in the quality field has placed it in an enviable position in the past, particularly in strong kraft pulp. Questions concerning manufacture, transportation (Sweden has lost 225 vessels or about one-third of its total pre-war merchant marine), foreign exchange, import duties, and competitive markets will arise.

Ed. note.—PACIFIC PULP & PAPER INDUSTRY reported in an article last month that a Swedish sales representative in eastern U. S. is presently soliciting customers for Swedish pulp and hoping to make deliveries this year from a 400,000 kraft and sulphite stockpile.

Contrary to common belief, the forest resources of the Scandinavian countries taken as a whole have not been over-cut or generally destroyed during the war. The actual cut of timber in Sweden for lumber, pulp, and fuel wood has probably been less than half of pre-war drain. In Norway and Finland there has been more actual damage due to active war and greater demand for logs, lumber, and fuel wood to sustain the armies and for fortifications, but, even then, these have probably been offset by smaller cutting in other areas in these countries. It would appear that unless there is further active warfare in the Scandinavian countries the forest resources will be in good condition for use in the post-war period.

Sweden is one of the most extensively forested countries in the world. Its forest area covers about 58,000,000 acres, or almost 60 per cent of the entire country. These forests consist of about 85 per cent pine and spruce, the former predominating, and from 10 to 15 per cent hardwood.

One of the most outstanding features of the economic development of Sweden during the past few decades has been the unusual expansion of the wood pulp industry. In the peak year of 1937, exports of pulp amounted to about 2,814,000 short tons, or 42 per cent of the total volume of the world's exports for chemical pulp and 31 per cent for mechanical pulp. In that year, Sweden occupied first place as an exporter of mechanical pulp, bleached and unbleached sulphite, and sulphate pulp.

In 1937, the bleached sulphite production was 514,000 tons, of which 175,000 tons was rayon pulp, mainly for export. Because of the great demand for unbleached sulphate from the United States and Europe, production in this commodity almost trebled between 1928 and 1937 (474,000 tons to 1,158,000 tons). The United States was the largest user of Sweden's cellulose, imports almost doubling between 1928 and 1937 (601,900 tons to 1,130,075 tons). (U. S. imports in 1939 had risen again to 957,879 tons after dropping off to 830,087 tons in 1938. U. S. pulp imports from Finland and Norway were much smaller.)

Sweden's Export Troubles

In 1939, there were about 96 pulp mills and 74 paper mills in Sweden. Three-fourths of the production of pulp was turned out in mills located in Norrland and the provinces of Balarna and Varmland. The manufacture of paper was concentrated in the southern part of the country.

During the weeks close after the outbreak of war in 1939, there was practically a suspension in export shipments. Blockade measures instituted by the warring powers completely isolated the Swedish pulp and paper industries from their most important export markets. About 70 per cent of the wood pulp and about 80 per cent of the paper exports had been going to countries cut off by the blockade.

Contrary to general opinion, the Swedish pulp and paper industry witnessed a decline in production and export in 1943, as compared with 1942, returning to the levels of 1941. For the 10-month period of 1943, sulphite wood pulp operating capacity was only 43 per cent of full production in comparison with 62 per cent in 1942, while sulphate total operation for 10 months of 1943 was 35 per cent of capacity in comparison with a like period in 1942 of 48 per cent. The 1941 estimates placed the sulphite and sulphate wood pulp production percentages at 35, while the groundwood industry had operated at not more than 10 per cent of capacity during 1940, 1941, 1942, and possibly 1943.

Before the invasion of Norway in April, 1940, Sweden shipped a large tonnage of wood pulp through that country because of mined waters off southern Sweden. Prices rose considerably in consequence of higher freight and insurance rates and higher production costs, which eventually necessitated many contract cancellations by the importing countries. As the war progressed and Norway was invaded, Sweden's wood pulp exports sank from 1,058,500 tons in 1940 to 833,400 tons in 1941, and to 722,00 in 1942 (preliminary estimates). From January to March of 1943 wood pulp exports were about 96,000 tons.

Through the medium of trade agreements, Sweden was gradually enabled to make small shipments of wood pulp to Germany, Italy, and the rest of Europe. As this developed, a greater tonnage of rayon pulp was shiped to Germany and Italy. Under a global contract with Germany concluded in June, 1940, Sweden could export 170,000 to 175,000 tons of bleached and unbleached sulphite and sulphate, and some rayon-grade pulp. In June, 1941, the German invasion of the Soviet Union brought exports to Europe to practically a standstill. Gradually, however, exports resumed, and during 1942, though hindered by payment and transportation difficulties, Sweden managed to keep its export channels with the Continent fairly clear. During 1943 exports to Europe slackened, since transactions on a compensation basis became more difficult.

With no indication of an improvement and no likelihood of early exports to America or England, most of the mills, except for domestic production, will probably close down during the coming months. Some of the mills, whose mechanical set-up will permit, will probably run one machine or some portion of the plant. Several of the kraft mills are already shut down, and the industry is much concerned, particularly since the loss of its South American markets.

To increase its exports in 1942 and 1943 negotiations were carried out with England and Germany for safe-conduct traffic for Swedish ships. Though there have been interruptions from time to time, safe-conduct traffic was resumed January 10, 1944.

Searching For New Uses

To compensate for the loss of markets, Sweden has turned to research to find new uses for its pulp and utilize the products of the forest in the Swedish home market. Fabrication of rayon and other paper textiles has increased, and production of cattle fodder from cellulose increased from about 60,000 tons in 1940 to about 300,000 tons in 1941. Finally, such a

*The author, now in the Pulp & Paper Unit, U. S. Dept. of Commerce, spent 2½ years in close contact with the Scandinavian industries, working in many of Finland's largest pulp and paper mills. Most of this article deals with Sweden, considered a far more important factor in the U. S. market than Norway or Finland..

great demand arose for cellulose fodder that the production resources of the sulphite mills became insufficient. It proved possible to produce cellulose fodder also cut of sulphate pulp. A government contract covering from June, 1942, to May, 1943, called for about 600,000 tons of fodder cellulose, one-half of sulphite pulp and one-half of sulphate pulp. (This contract was later revised down to about 375,000 tons.) However, the utilization of wood pulp in the manufacture of fodder cellulose is considered strictly a wartime emergency measure, undertaken in the absence of a sufficient amount of natural feedstuffs.

By-products have assumed increasing importance for Swedish pulp mills, and in some cases mills have been kept running primarily to supply these materials, such as sulphite alcohol (in Sweden there are today about 33 plants producing an estimated 30,400,000 U. S. gallons), liquid resin, nad cellulose yeast.

Faced with the probability of being unable to regain all their old markets after cessation of hostilities, the Swedish producers of wood products are investigating new uses for the utilization of Swedish woods. This problem is engaging the attention of the Swedish government as well as of private interests.

Eighteen sulphite mills and six sulphate mills have built bleaching plants and one is presently in the course of construction. The building of these bleaching plants results from two things: first, a desire on the part of the industry to meet increased world demands for bleached pulp, as well as, high grades of paper to be made in Sweden from such pulp, and, secondly, a provision in Sweden's tax laws making it possible for capital investments to be made in plant facility on a basis very economical to capital. The capacity of the bleaching plants is not currently being utilized, but Sweden has built the plants with an eye to the future post-war period. About $12,500,000 has been invested by the pulp and paper industry in Sweden in the past two years in bleaching plants, office buildings, laboratories, and the modernizing of building and equipment.

From information available, it can be concluded that less than one-half of the total capacity of the paper and pulp plants in Sweden has been utilized for production during the past three years; that plant equipment and machinery in this field have not been run excessively, and are in excellent condition; that ample shut-down time (at least 50 per cent) and necessary quantities of supplies and repair materials have been available; that many new buildings, bleaching plants, and laboratories have been constructed in the past two years; that Sweden's forests are in a healthy condition through selective cutting, even though a large quantity of wood for fuel has been needed because of the failure of Germany to deliver coal; and that a study of the price of shares of the Swedish pulp and paper companies in the markets indicates that public confidence in them is good.

Prices on the average have been well maintained; there has been very little variation in the price of pulp and paper during 1943, the price in December, 1943, being approximately 300 Swedish crowns (U. S. $75) per ton. This price has been well maintained since 1939 when the price of pulp dropped to approximately 100 crowns (U. S. $25) per ton. Finally, in preparation for and anticipation of possible early shipments to former markets, at the end of 1943 there was on hand close to 500,000 tons of pulp, divided about evenly as to sulphite and sulphate wood pulp. This quantity is equivalent to only about 2 months exports in 1937.

The war will have wrought many changes in Sweden's pre-war export markets, and the possibility of resuming exports to the United States on a former scale is very much in doubt, because of the increased new and efficient wood pulp capacity in this country and Canada. Canada has increased its chemical pulp production to meet both United States and domestic needs, in fact both the United States and Canada because of proximity to the expanding South American markets, may be able to retain a larger share of their pulp imports than in pre-war years. The British and Continental paper makers will in all probability turn to Sweden for a large percentage of the Swedish pulp exports.

Linda Welcomes Powell River Visitors

Just to demonstrate that pulp and paper men do get around, here is a photograph of D. A. EVANS, Resident Manager of Powell River Co., in a happy group at Hollywood. Beside him, on the left, is LINDA DARNELL, 20th Century Fox beauty, and on the right is MISS EDITH MATLACK of the Newsprint Service Co., Los Angeles. MRS. EVANS accompanied her husband on his tour of the movie lot and she is shown at the left.

The visit to Hollywood was made during Mr. Evans' recent trip south to contact publishers and others interested in the British Columbia paper town's products.

New Book By Porter On Pulp Industry

● The story of wood pulp in peace and in war—is told in a new illustrated booklet "Wood Pulp . . . A Basic American Industry," just released by Oliver M. Porter, executive director of the United States Pulp Producers Association.

The purpose of this booklet, as described by Mr. Porter, is "to indicate the extent to which the products of the United States pulp industry are meeting the requirements of war and essential civilian needs."

Mr. Porter states that "despite increasing difficulties resulting from inadequate supplies of labor, wood and transportation, this basic American industry has increased its production of specialized pulps needed in the war effort and has supplied an increasing share of the pulps required by the government agencies and civilian populations of all of the Allied Nations."

This booklet contains a brief sketch of the history and growth of the United States pulp industry; describes the various processes by which the major grades of pulp are produced; indicates the importance of wood pulp in every home and industry in America as well as on the far-flung battle fields of this global war.

Copies will be sent to people in the pulp or paper industry (if request is made on business stationery), by the United States Pulp Producers Association at 122 East 42nd Street, New York 17, N. Y.

New Livewire Chicago Paper Group Aspires to Charter As a TAPPI Section

● Filling a long-apparent need in the great midwestern metropolis, paper manufacturers, converters, technologists and salesmen have formed a new organization known as the Chicago Professional Paper Group.

It is contemplated that this group eventually will become another section of the Technical Association of the Pulp & Paper Industry, taking its place alongside the New England, Delaware Valley, Empire State, Kalamazoo Valley, Ohio, Lake States and Pacific Coast sections. Under TAPPI rules, the Chicago Group will be eligible for admission to TAPPI three years from the date of its organization.

The idea of a Chicago organization was talked up by small groups of industry leaders during the TAPPI-sponsored Army-Navy Paper Requirements Conference at the Palmer House, Chicago, last September. The first regular meeting was held at the Medinah Club on Michigan Avenue on December 6 with 86 present and accounted for. Four more monthly meetings have been held since that date, with attendance as great as 235. That sizeable figure and the fact that the organization has a mailing list of 500 is proof positive of the great void that has been filled by this group.

These are the first year officers:

President: Harold R. Alley, technical director of Tested Papers of America, Inc.

Vice President: A. E. Montgomery, western manager for J. O. Ross Engineering Corp.

Treasurer: Arnold McAneny, Bradner, Smith & Co.

V. V. Valandigham, Kalco Co.

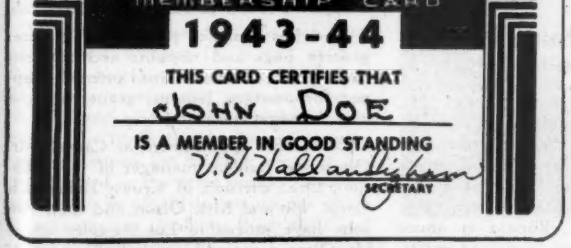
The first three meetings were held at the fashionable Medinah Club with buffet suppers. This was not a complete success. Now the Chicago PPG has chosen for its home the Hamilton Hotel at 20 South Dearborn St. It held March and April meetings there and plans to make that hotel the permanent site for gatherings.

"Anyone interested in the industry who is in Chicago on the first Monday of any month except July and August is welcome to join in our dinner meetings," said Mr. Alley. "We plan ten meetings a year—skipping those two months in the summer."

Membership is $2 per annum. Dinner tickets are $2.50 for members and $2.75 for non-members, tip and tax included.

At the May 1 meeting at the Hamilton, Dr. Otto Kress, director of the Institute of Paper Chemistry, Appleton, Wis., will be the featured speaker, discussing "Fundamentals of Pulping."

A few of the other speakers they have had at past meetings are Capt. Raymond J. Schadt, U. S. Army chemical warfare service, formerly executive assistant, Crown Zellerbach Corp.; Maj. James d'A. Clark, Army Quartermaster Corps, formerly with Mead Corp. and Scott Paper Co.; and S. M. Hull, who lost his sight in a laboratory accident 20 years ago, yet has been library research director for Western Electric since then.



Here's membership card of Chicago PPG.

Proving that the Chicagoans have a really live wire group, they sponsored two panel discussions on packaging at the War Production Conference held in Chicago in March.

There are no paper mills in the Chicago metropolitan area except container plants. But there are a large number of converters, box makers, etc. There are, however, 150 salesmen for paper mills headquartered in the Windy City.

There is no doubt now that the new Chicago PPG has come out of its growing pains stage with a clean bill of health and it is some day bound to be an important section of TAPPI. Right now, it has taken its place along with the Maine-New Hampshire papermakers group as an aspirant to a TAPPI charter.

HAROLD R. ALLEY, First President of the newly organized Chicago Professional Paper Group, which in 1946 probbably will become a TAPPI section. Mr. Alley is Technical Director, Tested Papers of America, Chicago.

Harold Alley's Letter

Mr. Alley, the president, in a letter to PACIFIC PULP & PAPER INDUSTRY, wrote:

"We are at least meeting fellow technologists in the varied industries in this area, have had some fine programs, are learning new things about our industry each month, are having some fun, are glad that Dr. Kress will speak next month, and are toying with a meeting entitled, 'Simplified Paper Technology and Terminology' for June. It will be a home talent affair to discuss the meaning of technical terms and tests in fine papers, coarse papers, board, coated papers, etc. We are attempting to keep on the practical side of things and serve the interests of all paper people in the Chicago area, more particularly the things that pertain to paper useage.

"I guess we are doing O. K. as our membership now stands at about 160. The whole group of founders and officers have pulled together wonderfully so far and I hope we can continue to show progress.

"We just cooperated with the Chicago Technical Society's Council and the WPB in staging two panels on war packaging which was staged for war plants in this area of about 4 or 5 states. We had eight good speakers and possibly helped solve a war problem or two, directly and indirectly."

Mr. Alley, who was 39 years old on March 20, was born at Oxford, south of Wichita, Kan., and was graduated in chemical engineering from the U. of Kansas, following up with studies at the University of Chicago night school and Northwestern U. School of Commerce. After 14 years with Shell Oil and Commonwealth Edison, he became director of the testing and development laboratory of Tested Papers of America, Inc., in August, 1942.

Here's a Tip from Kalamazoo Valley-- How to Entertain at Industry Meetings

● Here's a tip for all types of organizations in the pulp and paper industry. It should be of interest to TAPPI and superintendents' groups in both United States and Canada:

The Kalamazoo Valley superintendents' affiliates have evolved a successful scheme for keeping small groups from breaking away from the main parties at gatherings and ganging up in hotel rooms. Their scheme also is proving successful as a "share-the-expense" plan for the entertaining equipment and supply company representatives.

Again this year—for the fourth year—this plan is going to be put into effect in connection with the "Ladies' Night" on Tuesday evening, June 6, at the Annual TAPPI—Superintendents Joint Meeting in Kalamazoo, Mich.

A representative of PACIFIC PULP & PAPER INDUSTRY, visiting mills in Kalamazoo recently, was invited to sit in with four industrial affiliate members of the superintendents' division when they made this year's arrangements. The meeting, held at the fashionable, but also comfortable, red-brick Park Club in that famous paper mill city of Michigan, was attended by Milt Bailey, Bulkley-Dunton Pulp Co.; Robert Buss, Hercules Powder Co.; Jack Dixon, R. T. Vanderbilt Co., and Roy Holden, Stowe-Woodard, Inc. Here's the plan they put into motion:

Each affiliate member of the superintendents—"peddler" to you—will contribute $5 to a fund to buy the wherewithall for cocktails and after-drink refreshments. This fund buys aplenty to keep about 200 men and women happy, both before and after the "Ladies Night" dinner, and to pay wages for a couple of crack bartenders.

Bar and tables are in a separate room off the dining room. A sign goes up reading: "No drinks during dinner." But before and after the dinner, this is the place of entertainment and good fellowship. Groups may have their own tables and still individuals may wander from table to table to meet other friends, as they please. Talented members may put on the entertainment.

Here are the advantages of the scheme:

1. It is fair to each equipment or supply salesman or representative as each one shares costs equally. No one is left out.

2. It keeps groups from collecting in rooms to the detriment of the general purposes of the meeting.

3. Business and drinks are kept apart.

Since the Kalamazoo Valley affiliates have been carrying out this scheme, they have found that nearly 100 per cent of their group have contributed—gladly, and no doubt, in many cases with a feeling of great relief. There are about 30 "peddlers" in the Kalamazoo Valley organization and it is confidently expected they will all contribute again this year. Michigan, as in other states, has liquor license laws now, and this means that some of the men will loan their permits to the committee in order that supplies might be obtained.

All around, it has proved a very successful arrangement. And that's the gist of it—which other TAPPI and superintendents groups may adopt or scorn, as they jolly well please.

Sportsmen Pleased by Industry-Sponsored University of Washington Research Program

● The industry-sponsored University of Washington $300,000-$500,000 research program aiming to find commercial uses or ways of disposing of pulp mill effluent, was explained in detail to an April 4 meeting in Seattle of the King County Outdoor Sports Council.

Don Johnson, president of the 30 clubs in this organization, told PACIFIC PULP & PAPER INDUSTRY he was so enthused by the cooperative spirit and understanding of the mills' problems brought out at this meeting that he is planning a similar session for a meeting of the State Sports Council in the near future.

Members of the state pulp and paper industry's executive and technical committees, which are sponsoring the University program, answered innumerable questions fired at them by the sportsmen and others at the meeting. The questions and discussions ranged over the whole field of possible economic uses of the chemicals in pulp mill effluent.

"It is the first time we sat down and had a heart-to-heart talk with the people we have been blasting from a distance," said Mr. Johnson, who added: "The pulp industry representatives came to the meeting at my specific invitation because we wanted to find out more about this University research program."

Max Campbell, chairman of public health and sanitation for the State Health Department, and Col. William Fraser, field engineer for the State Pollution Commission, were among others besides sportsmen present. Following the meeting, sports writers of the Seattle Times and Seattle Post-Intelligencer, wrote articles testifying to the fuller understanding of pulp mill economic problems and the limitations on markets for pulp mill by-products gained at the meeting. They commented favorably on the value of the meeting.

Benson Baby Doing Fine

Ronald Stewart Benson, son of W. R. Benson, chief chemist of the Crown Zellerbach mill at Carthage, N. Y., and Mrs. Benson, and the grandson of Dr. H. K. Benson, head of the department of chemistry, University of Washington, is doing very nicely after his first winter in the snows of northern New York. Born last September, Ronald is about seven months old now.

A. W. Olson Becomes Los Angeles Manager

● A. W. Olson, who for a number of years has been an assistant to J. E. Hanny, resident manager, Crown Zellerbach Corp., Camas, Wash., has become manager of the operations of the Los Angeles converting plant of the Crown Willamette Paper Co., division of Crown Zellerbach Corp.

Jake Gigler, who had been foreman of the napkin and laminating machines department at Camas, also has been transferred to Los Angeles to be general superintendent of that plant.

Mr. Gigler's son, Wolfe Gigler, succeeded his father as foreman in Camas.

The Los Angeles plant manufactures grocery bags and napkins and converts tissue paper from rolls into printed wrapper for oranges, lemons, grapefruit and also the vegetable trade.

Before his appointment at Camas, Mr. Olson was resident manager of the Lebanon, Ore., division of Crown Zellerbach Corp. He and Mrs. Olson and their two sons have moved to Los Angeles where Mr. Olson assumed his new duties April 1.

A FIFTY-YEAR SERVICE PIN AWARDED TO LOUIS BLOCH, Chairman of the Board, Crown-Zellerbach Corp., in Saan Francisco April 5. Seated at the speaker's table were: (left to right) ALBERT BANKUS, Vice-President; MRS. FRANKLIN T. GRIFFITH; GEORGE S. TOWNE, Director; R. A. McDONALD, Executive Vice-President; JOHN FRANCIS NEYLAND; MRS. J. D. CAMPBELL, JAMES SCHWABACHER; MRS. LUDWIG SCHWABACHER; MR. BLOCH; MRS. LOUIS BLOCH; J. D. ZELLERBACH, President; MRS. FRANK L. JEDDIS; FRANKLIN T. GRIFFITH, Portland; HAROLD ZELLERBACH, President, Zellerbach Paper Company; THOS. McLAREN, Treasurer, Crown Zellerbach Corp.; HERBERT FLEISHHACKER, Director; J. Y. BARUH, Los Angeles, Vice-President; D. S. DENMAN, Seattle, Vice-President, and WILLIAM D. WELSH, Executive Assistant.

Louis Bloch Awarded 50-Year Pin At Crown Zellerbach Testimonial Dinner

● A pioneer in the Pacific Coast pulp and paper industry reached an important milestone in his career when Louis Bloch, chairman of the board of Crown Zellerbach Corporation, was awarded a pin commemorating fifty years of service with that corporation and predecessor companies.

The presentation was made at a dinner at the Palace hotel in San Francisco on April 5, before members of Mr. Bloch's family, business associates, personal friends and about 300 employees. The actual presentation of the pin was made by Mrs. Ludwig Schwabacher, widow of the last vice president and general manager of the pioneer Crown Paper Company, who was Mr. Bloch's first employer and mentor.

J. D. Zellerbach, president of the Crown Zellerbach Corporation, who acted as master of ceremonies, traced the relationships between the Zellerbach and Bloch families which began more than forty years ago. Mr. Zellerbach then presented to Mr. Bloch a beautifully engrossed, leather-bound testimonial signed by thirty of his official associates of Crown Zellerbach organization.

Representing Crown Zellerbach employees was William D. Welsh, of San Francisco headquarters, who said in part: "I have a comfortable feeling of being on high and safe ground tonight in voicing to Mr. Bloch the employees' genuine congratulations for his fifty years of going forward in the same industry and organization to which the employees whom I represent are applying their skills and investing their years."

Mr. Zellerbach then introduced John Francis Neylan, nationally known attorney, who for many years represented one of the company's largest customers of newsprint. Mr. Neylan recalled consummating with Mr. Bloch one of the largest single newsprint contracts in the United States and one which Mr. Neylan said had much to do with expansion of the newsprint manufacturing industry on the Pacific Coast.

Following Mr. Neylan's remarks, Attorney Franklin T. Griffith, of Portland, Ore., himself a wearer of a Crown Zellerbach fifty year pin, told of the early beginnings of the pulp and paper business on the Pacific Coast and of the part

MRS. LUDWIG SCHWABACHER presents the 50-year pin to LOUIS BLOCH, Chairman of the Board, Crown Zellerbach Corporation.

Louis Bloch played in its development.

There also was a presentation to Mr. Bloch of a "service pin" from Crown Zellerbach forests by the timber department representatives. This "service pin" was a carefully selected cut from a fifty year old hemlock tree which began its growth in Crown Zellerbach forests of Washington state in the same year Mr. Block went to work as a paper finisher in the bag plant of the Crown Paper Company in San Francisco. In those fifty years the tree had attained a diameter growth of 14 inches and was 42 inches in circumference. Inset in the two-inch thick cut was a handsome engraved gold plate on which was inscribed the timber department's congratulations and appreciation to Mr. Bloch for his fifty active and constant years of interest in "trees and men."

Another presentation was a beautifully engrossed plaque from Crown Zellerbach employees to Mr. Bloch for his "Fifty Years of Accomplishment."

The climaxing ceremony was the actual presentation of the fifty year pin by Mrs. Schwabacher to Mr. Bloch.

In responding to the well wishes of those present, and letters and telegrams which came from Governor Earl Warren of California, Mayor Roger B. Lapham of San Francisco and scores of others, Mr. Bloch told of his start in the paper business at $4.50 a week in the Crown Paper Company bag plant at San Francisco and of the encouragement that he received from Mrs. Bloch. He paid tribute to his pioneer employers, Ludwig Schwabacher and William Pearce Johnson, and also to the present employees whom he said he referred to "as my associates, since after all we are all employees."

The presentation was the seventh fifty year pin in Crown Zellerbach history.

Among those attending were mill managers, research men and engineering heads of the corporation from the Pacific Northwest, who had been for two days attending long-range planning meetings in San Francisco.

U. S. Considers More Alcohol Plants As Work Progresses on Bellingham Site

Markets for lignin are studied as Government looks into possibility of financing other reduction plants in connection with pulp mills ' ' ' Thorold, Ont., increases its capacity —and incidentally, marketable pulp which will be welcomed in wartime crisis.

As construction work began last month on the new million dollar alcohol reduction plant of the Puget Sound Pulp & Timber Company in Bellingham, Wash., a representative of this magazine was told by officials in Washington, D. C., that four other large pulp producing companies in widely separated parts of the United States are being officially considered as sites for similar alcohol plants.

The government would finance construction, as in the case of the Bellingham company, and would purchase the entire output for use in synthetic rubber manufacture, explosives, etc. The government is putting up $980,000 for the Bellingham plant and a percentage of the price paid for the alcohol is returned to the government as rental.

With this plant going up at Bellingham, another similar plant built last year at the Ontario Paper Co., Thorold, Ont., now increasing its capacity (and incidentally its marketable pulp) and with possibly other plants in prospect, considerable interest has been developed in the use of the lignin from the pulp mill effluent for plastics manufacturing.

When sugar is removed from the pulp mill effluent in these reduction plants for alcohol manufacture, the bulk of the residue is lignin. Lignin is present in amounts up to four times the weight of the sugar used. Lignin already is being used to a limited extent as a raw material for plastics by the Marathon Paper Mills. An experimental process for using solubilized sulphite lignin as an impregnant for laminated paper has shown promise.

Jack Underwood, veteran representative of the Seattle Chamber of Commerce in Washington, recently recommended that the house agricultural appropriations subcommittee approve $100,000 for experiments in commercial use of lignin. If the lignin sold for one cent a pound, he said, it could have an effect of somewhat bringing down the cost of other products derived from pulp mill effluent. Without utilizing or selling the lignin, the alcohol plants may be able to get the costs of alcohol down to below 20c.

This, Mr. Underwood said, compares with 96 cents a gallon paid by the government for alcohol produced from grain. In some cases, the government has paid up to $1.60. Nearly five-sixths of the alcohol now being made for the government is produced from grain at these prices. The remainder—except for what is made from pulp mill effluent—is produced from petroleum or molasses. The price of alcohol made from petroleum must not exceed 24 cents, by OPA regulation, and that made from molasses, which is only a small percentage of the total, is about somewhere near the figure for pulp mill effluent.

The most optimistic estimate of alcohol production in 1944 for war purposes is 609,000,000 gallons, which is considerably short of estimated requirements of 642,000,000 gallons. More than 500,000,000 gallons will be produced from grain at high cost to the government.

Lawson P. Turcotte, executive vice president of the Puget Sound Pulp & Timber Company, announced in mid-March that the general construction contract for the Bellingham alcohol plant was awarded to Howard S. Wright, of Seattle, who built the units added to that company's pulp mill in 1937 and 1940. Mr. Turcotte also announced that the Vulcan Copper & Supply Co. of Cincinnati was awarded the contract for furnishing the processing equipment.

Work on foundations for the structure at Bellingham began on March 27, employing about 50 men. The new structure will be of steel and tile and will stand east of the present office building. It will have a four story front and be T-shaped in design.

Bellingham Output Starts Next Fall

● It is hoped to have the Bellingham alcohol plant in operation about next November.

Research is still going forward on some of the processes to be instituted at Bellingham and this work is being done by, and under direction of Erik Ekholm, general superintendent, and Eric Ericcson, technical director. Engineering is under the direction of Vic Haner, plant engineer.

The Puget Sound Pulp & Timber Company hopes to produce 16 to 18 gallons of alcohol to every ton of pulp produced. It has a capacity of 450 tons of unbleached sulphite pulp per day but recently has been operating at 60-70 per cent capacity, owing to the log

shortage. The company has $3,500,000 invested in British Columbia timber but has been able to receive only small amounts of logs from Canada in the "token" allotments to Puget Sound mills permitted under Canadian log export embargo.

The alcohol plant probably will be the most modern for production of alcohol from pulp mill effluent in the world and, at present, it is by far the largest envisaged or already constructed. There are many such plants subsidized by governments in connection with pulp mills in Scandinavian countries and Germany, owing to shortages of grain in those countries, and recent reports state that Russia has been building similar pulp mill plants for alcohol to use in synthetic rubber manufacture.

This is the process that will be installed at Bellingham: (1) Pulp mill effluent will be treated with steam to remove sulphur dioxide, then neutralized with lime to reduce the acidity to a degree suitable for fermentation; (2) the liquor will be pumped to the fermenters, yeast and a little nutritive salt added and fermentation allowed to take place; (3) the fermented liquor will be run through centrifugal separators which remove the yeast, (4) the yeast, removed by separators, will be reused in the next fermentation cycle, while the clear beer, containing approximately one per cent alcohol, is fractionally distilled and the dilute alcohol rectified to 192-proof.

Sugar is present in all raw wood but more is formed from cellulosic and hemicellulosic fractions during chemical digestion of pulp. The total sugar content of the spent cooking liquors usually amounts to two to four per cent. About 65 per cent of these sugars is fermentable by ordinary yeast. The ratio of pulp mill effluent to the pulp produced is 8-10 to 1 by weight.

Sulphite liquor ordinarily contains, in addition to the fermentable sugar, a certain amount of lime, about 2 g. per 1. of bound sulphur dioxide, 1 g. of free sulphur dioxide, a part of the methanol originally produced in the cooking operations, and a considerable percentage of lignin and other soluble organic materials ordinarily not fermentable. Altogether the liquor usually contains a total of 10-13 per cent solids.

The Bellingham plant is expected to produce about 2,000,000 gallons of alcohol a year. This will be sufficient to produce 5,000,000 pounds of Buna S rubber.

Alcohol Plants Not New In U. S. Pulp & Paper Industry

• Some leaders in the Pacific Coast pulp and paper industry, now that an alcohol plant is arising at Bellingham, are recalling old days at the West Linn, Ore., mill of Crown Zellerbach Corp., when an alcohol still was installed at the pulp mill and made 200 gallons per day from mill effluent.

For several years alcohol was produced from sulphite liquor at the West Virginia Pulp & Paper Company mill at Mechanicsville, N. Y., on the old barge canal north of Albany.

This pulp mill was visited recently by a representative of PACIFIC PULP & PAPER INDUSTRY. The old brick alcohol plant is still there, but it is completely dismantled—the towers, condensers, etc., all have been taken out. At the beginning of World War II, this equipment was sold to the new wartime plants making alcohol out of other raw materials.

The alcohol plant at the Mechanicsville pulp mill was not a success. The principal difficulty was keeping up production. The capacity of the sulphite mill at Mechanicsville is 130 tons per 24 hour day.

The operators began bringing molasses from the West Indies up the Hudson River to the mill on barges and this mixed with the sulphite liquor production in order to fortify and increase it. At one time the production of alcohol at West Virginia Pulp & Paper Co.'s mill was largely from molasses rather than the waste liquor. But war cut off these molasses shipments. The tanks where the molasses was stored are now used to store oil.

One of the principal early problems of alcohol production from sulphite liquor was producing enough alcohol to make it economical. Many leading authorities interested in such processes consider it could be feasible only for the largest mills.

Incidentally, while West Virginia's Mechanicsville plant had to give up on alcohol, it has been one of the progressive leaders of the industry in many ways. It makes bleached sulphite and soda pulp of long fibers, manufacturing it into machine finished and super-calendared book, lithograph and heavy bond type papers on six paper machines. It has made considerable headway in developing a continuous production of paper and getting away from the use of beaters.

Thorold Alcohol Operations Increasing Pulp Capacity

• The Thorold alcohol reduction plant, which went into operation June 18, 1943, was designed to have an output of 600,000 gallons a year. Processing improvements have since increased this figure to about 800,000 gallons. An increased capacity of pulp production for the plant, as recently reported, will add considerably to this output.

The output is wholly for war purposes as designated by the Canadian Controller of Chemicals. Meanwhile the experimental value of such plants to private industry should not be overlooked.

Design and installations at Thorold were drawn up by Dr. M. M. Rosten, of St. Catherines, Ont., owner and operator of the Kutno Chemical Works in Poland, which has been seized by the Germans.

The Kutno Works in 1938 was producing 14,500 gallons of absolute alcohol daily as well as derivatives of alcohol, including acetic acid. This plant began production of power alcohol in 1927 and was the first of its kind in Eastern Europe. Dr. Rosen, who first visited Canada in 1938 at the request of the province of Quebec, has built more than 50 different alcohol units of various sizes throughout Europe.

A number of improvements were introduced at Thorold by Dr. Rosten over similar sulphite liquor plants in Europe.

Recently, a new process for low cost production of industrial alcohol based upon the use of sodium sulphite, discarded by-product of the coke and other industries as well as the pulp industry, was announced by Carl J. Kiefer, vice president in charge of production of Schenley Distillers Corp., New York City. The company's Green River distilling plant has been selected by the WPB Office of Research Production and Development for conduct of experiments to determine feasibility of commercial use of the process.

Dr. Rosten's Comments

In communications to the PACIFIC PULP & PAPER INDUSTRY, Dr. Rosten made these comments on the Thorold operation and the general question of alcohol production:

"The alcohol plant at Thorold is at present in smooth-running operation. We are converting all available sulphite liquor to alcohol and getting high quality rectified 96% ethyl alcohol. Its quality is not less than grain alcohol and exceeds the U. S. Army No. 1 requirements for purity. The War Production Board in Washington, is at present displaying considerable interest in this new development. The present war requirements of alcohol in United States are five times greater than in pre-war days. Because of

the shortage of grain and molasses to meet this tremendous demand, there is much interest in all new sources of alcohol.

"The present cost of alcohol is about four times what it was before the war, and now averages 90 cents per gallon as compared to the 22 cents per gallon pre-war price. It is continually growing more difficult to secure the grain supply for the alcohol industry. Molasses as raw material could be available only for an estimated supply of 100,000,000 to 150,000,000 gallons of alcohol per year. The demand for alcohol in 1944 is estimated at about 600,000,000 gallons—an amount six time in excess of the pre-wartime output.

"Producing alcohol from pulp mill effluent seems the saving of a large amount of transportation facilities needed for raw materials such as grain, molasses, etc., which must be transported to the alcohol plant. The sulphite liquor alcohol plant is built at a place near the pulp mill, and to get the raw material to the alcohol plant it would be necessary to build a short pipeline only.

"Many pulp mills possess an excess of low pressure steam which is necessary for distillation. This saves the material required for building a new steam power plant. The small amount of power required for the alcohol plant is available in every existing pulp mill."

On Re-Use of Yeast

● Discussing the development of the "re-use of yeast" method recently developed in production of alcohol from pulp mill effluent, Dr. Rosten wrote:

"In 1936 the method of 'Les Usines de Melle' called 'the re-use of the yeast' was first used for sulphite liquor fermentation at the Attisholz pulp mill in Switzerland. This method was a great success in the world alcohol industry, and particularly in alcohol production from sulphite liquor.

"The 're-use of the yeast' method depends upon the separation of yeast cellules from the wort immediately after the fermentation is over. This is done by means of a centrifugal separator, when the cellules have not yet lost their activities.

"The increase of the yield of alcohol by this method comes from three sources. First, by saving the sugar used for building yeast cellules; second, the strong initial concentration of yeast cellules in the wort attacks other sugar, which usually is not fermented. In connection with this, the ration of the sugar used to the total sugar is much higher than it is in the other methods. The third source of the increase of alcohol yield is the separation of the injurious bacteria which cause fermentation other than alcoholic.

"As a result of this method the yield is increased by 28% and the time of duration of fermentation is shortened by 40%. By shortening the time we save on the capacity of fermenters, and therefore we lower the cost of the plant. The cost of labor is also much lower.

"The re-use of yeast method was applied at the Thorold plant. I introduced some improvements and we succeeded in fermenting the sulphite liquor within 20 hours, on an average, instead of 70 to 90 hours which is necessary to ferment sulphite liquor according to the Swedish method.

DR. M. M. ROSTEN, Polish refugee who designed the Thorold, Ont., alcohol plant. He sees bright prospects for power alcohol. Discusses alcohol problems in communication to PACIFIC PULP & PAPER INDUSTRY.

"To obtain one U. S. gallon of alcohol at the Thorold plant, we use 100 U. S. gals. of waste sulphite liquor and about 3 lbs. of lime. The other chemicals are negligible. Labor consists of 4 men per shift. The power used in operating the pumps, compressor, and separators is about 1½ kilowatt hours per gallon. The steam for distillation and processing runs about 100 lbs. per gallon. From the cost of steam the value of recovered heat from waste sulphite liquor must be deducted. By decreasing the alcohol yield from sulphite liquor we can produce a large quantity of yeast, a volume of vitamins and high protein food."

Rosten's Views on Power Alcohol

Dr. Rosten expressed these personal views on the future of power alcohol:

"The superiority of alcohol over mineral raw materials in the catalytic production is due to the group OH content and the purity of the raw-material cause easier and deeper reactions. Therefore the yield of particular phases of production is very high and amounts from 90% to 95% of the theoretical yield.

"In catalytic processes alcohol as a raw material finds wide application in the synthetic rubber production in Poland and in Russia.

"In 1943 the large synthetic rubber program in the United States consumed about one-quarter billion gallons of alcohol in its production of rubber.

"In the organic chemical industry the demand for acetic acid is very large and increases gradually. According to the method used by the KUTNO Chemical Works in Poland, from 1 lb. of alcohol we can obtain 1.2 pounds of 99.5% acetic acid (glacial).

"However, the most important outlet for alcohol in America is as power alcohol. In the last 18 years about 30 countries throughout the world have introduced power alcohol as fuel. Before the war the world consumption of power alcohol amounted to 250 million gallons annually. The addition of alcohol to gasoline raises the octane rating of gasoline. Every 1 per cent of alcohol raises the octane rating approximately 1 octane.

"The United States, before the war, consumed more than 25 billion gallons of gasoline annually. By adding only 10% in the form of power alcohol an additional outlet for 2½ billion gallons of alcohol is provided, which represents about one billion bushels of grain, should this alcohol be produced from surplus and low-grade American grain. This would solve practically all the peacetime troubles in American agriculture which costs the United States Government, and consequently the United States taxpayers, $500,000,000 to $800,000,000 annually in the form of cash grants for agricultural unemployment. Considering this problem from the angle of American national economy, by the introduction of power alcohol as liquid fuel for motor cars on the American market, the United States would postpone the approaching catastrophe in the supply of liquid fuel.

"The crude oil reserve in the United States is sufficient for a maximum of 15 to 20 years. Mr. Farish, President of Standard Oil of New Jersey, confirmed these figures. Recently Secretary of the Navy Knox made the following statement: Within 14½ years the United States will be a 'have-not' nation in oil, when the last drop of its oil fields is drained (if the present rate continues). I am asking, what will be the value of billions of dollars invested in the states in industry, commerce, transport and agriculture without liquid fuel and lubricants?"

At U. S. Rate, World Paper Use Could Be Increased 5 Times

● Future of Canada's pulp and paper industry will be governed by two factors—the quantity of raw material that can be made available and the markets which can be secured for the products of that raw material, according to Elliott M. Little, general manager of Anglo-Canadian Pulp and Paper Mills, Ltd., Montreal, in an address to the technical section of the Canadian Pulp and Paper Association.

Improvements in logging methods and elimination of waste in the woods, said Mr. Little, could quadruple the size of the industry's output. The Canadian industry now has a capacity of 5,000,000 tons per year. As to markets, he pointed to the fact that use of pulp and paper products in other parts of the world on a scale approximating that prevailing in the United States would expand world consumption from five to six times. Per capital consumption in U. S. in 1936 was 226 lbs.)

J. A. Young Discusses Prospects for New Markets In Pacific Area; Industry's Postwar Position Good

CONTRARY to the position of many industries in the Pacific Northwest exclusively engaged in the manufacture of war supplies, the pulp and paper mills will be in an enviable position after the war because they will have no major re-tooling job to carry out, according to J. A. Young, vice-president and treasurer of Pacific Mills, Ltd., major pulp and paper producer in British Columbia.

Addressing more than 250 members of the advertising and sales bureau of the Vancouver Board of Trade, Mr. Young said that pulp and paper plants, notwithstanding difficulties in securing maintenance and repair materials, are well maintained and there will be no necessity for dislocation as they switch from wartime to peacetime production. "Our peacetime customers are ready and waiting to do business with us," declared Mr. Young.

Mr. Young's address was intended to give British Columbia businessmen a conception of the magnitude of the pulp and paper industry in Canada and, particularly, in Canada's west coast province. He spoke of the many wartime problems faced by the industry and of its direct contribution to the war effort.

"The impact of war was at once felt in the British Columbia mills, and they were called upon almost immediately to start production of special types of pulp and paper to be used in turn in the production of a host of products urgently needed by the armed forces," said the Pacific Mills executive. "In addition, another major contribution has been the production of airplane spruce for use in the aircraft industry, undertaken by Powell River Co. and Pacific Mills. By concentrated effort these two mills have been able to produce in excess of 60 per cent of the total airplane spruce produced in the British Empire.

"Other direct war activity has been an important volume of machine shop work, to relieve potential bottlenecks in the manufacture of certain auxiliary ship fittings, both at Ocean Falls and Powell River, which has lately been augmented by the undertaking of the Powell River Company to assemble aircraft parts."

Employs Half Million

• Outlining the national role played by the Canadian pulp and paper industry, Mr. Young said that it had become the greatest producer of foreign exchange, even outranking wheat and gold. The industry gave employment to more than half a million men and women, and was thus the largest industrial employer in the country.

"The products of our pulp and paper mills play a vital role in modern war. Pulpwood goes into the making of explosives, plastics, synthetic fibers for parachutes, fragmentation bombs, paratroop jump suits, surgical dressings, shell cases, blood plasma containers and the packaging of food and supplies for the armed services. Building board is substituting in great measure for lumber in the rapid construction of essential dwellings for war plant communities, for ship fittings and many other purposes."

Mr. Young reviewed Canadian production as follows:

Newsprint, including side run, 3,500,000 tons valued at $156,000,000; paper board, shipping and building, 582,000 tons valued at $43,294,000; wrapping paper, 162,000 tons valued at $16,700,000; envelopes, 2,100,000,000 valued at $6,300,000; shipping cases, tons included in board, valued at $37,50,000; building papers and roofing, 2,820,000 tons, valued at $12,378,000; woodpulp, made 5,680,000 tons, sold as such including bleached, 1,177,000; all valued at $90,000,000.

Referring specifically to what had been done in British Columbia, Mr. Young said that the industry had been expanding steadily since its inception in 1910 until it at present represented a capital investment of $70,000,000, with an annual production valued at $24,000,000 and a payroll just short of $10,000,000 annually, distributed among 5,800 persons. The industry spent $14,000,000 a year for materials, largely in British Columbia.

"The industry in British Columbia," said Mr. Young, "is essentially engaged in export. The domestic market absorbs only 17 per cent of the total products of pulp in our mills here.

"The British Columbia mills are well located to service these export markets with their deepwater harbors, ice free the year round, favorable geographical position, particularly in relation to those countries bordering the Pacific. If one might be justified in looking ahead to the post-war period, these latter markets are important factors which vitally affect the policy of an industry to maintain an export position.

"It is rather futile to prophesy what the export situation will be after the war. There are many factors yet to be determined — the mediums of exchange, tariffs, steamship service and freight rates, just to mention a few. We will be faced with the necessity of meeting competition from countries whose economic structures differ from our own; but we are confident that we can deal with these difficulties as they present themselves."

Among prominent men in the industry attending the luncheon meeting were Lawrence Killam, president of B. C. Pulp & Paper Mills; R. Bell-Irving, vice-president of Powell River Co., and Paul Cooper, vice-president and general manager of Pacific Mills.

Woodfibre Mill Forced To Close 3 Weeks

• Continuing shortage of labor, reflected in short supply of logs, has been a restraining influence throughout the past year at the mills of British Columbia Pulp & Paper Co., operating at Woodfibre and Port Alice. Directly due to scarcity of raw material the Woodfibre mill was closed down for three weeks in late February and March, and for several months the flow of logs has been on virtually a hand-to-mouth basis.

Early in the war, the company was encouraged by the Canadian government to increase production so as to assist the foreign exchange situation and supply more vitally needed pulp for the war program. Most of the company's output is rayon pulp and a large part also goes into production of explosives. But the company has not been able to make full use of an added capacity owing to lack of adequate manpower. During most of the year 1942 production was down to about 80 per cent of capacity.

The annual report of the company was issued recently over the signature of Lawrence Killam, president, who states that log shortage prevented the company from producing much in excess of the 1942 total. "Market demand for the various grades of bleached sulphite continues very strong," reported Mr. Killam, "and your company was the largest individual contributor of these in meeting the needs of Great Britain. Selling prices have remained generally unchanged. Cost of production, while above that of previous years, has not changed materially."

Interest and sinking fund payments on the company's 6 per cent first mortgage gold bonds were made in full during the past year, although no dividends on preferred or common shares were paid.

Directors of B. C. Pulp are Lawrence Killam, George Kidd, W. H. Malkin, R. C. Buchanan, Cecil Killam and K. C. Allen, all of Vancouver, and I. W. Killam, Montreal. George Kidd is vice-president.

Assistant manager at Vancouver is G. D. Humphrey, and plant managers at Woodfibre and Port Alice are E. P. Brennan and Peter McGhee respectively.

Hoquiam Employes Join AFL Unions

• Former CIO strikers at the Hoquiam, Wash., division of Rayonier Incorporated have been readmitted to membership in the American Federation of Labor unions. The AFL unions are party to the uniform labor agreement with the Pacific Coast Association of Pulp & Paper Manufacturers. Application of this contract to the Hoquiam mill was upheld several times by the War Labor Board during the labor controversy of nearly a year.

The strike, which lasted 60 days, ending in early February, wiped out a possible output of about 18,000 tons of pulp, and well over $300,000 in wages.

The mill is operating at near capacity again with more than 600 employes back on the job. Its daily production capacity is 220-230 tons of high alpha dissolving pulp, 70-80 tons bleached paper pulp and 70-80 tons bond, writing and other fine papers.

Everett Pulp & Paper Company Perpetuates Cottonwood Supply

By J. C. HAVES

In Charge of Woods Operations,
Everett Pulp & Paper Company, Everett, Wash.

VIEW OF COTTONWOOD TIMBER in Skagit County, Wash., owned by Everett Pulp & Paper Company.

ABOUT twenty-five years ago Everett Pulp & Paper Company of Everett, Wash., began its program of conserving and protecting its supply of cottonwood timber. The virgin stands, which the first settlers found here in the Northwest grew along the river banks and on silted-over bars formed by the shifting beds of the streams. Due to the favorable climate, which provided ample moisture and a long growing season, the cottonwood in these stands grew to a very large size, trees having a diameter of four to six feet and a clean trunk 100 feet to the first limb were not uncommon. Only a small part of these stands ever found their way to the mill in the form of pulpwood. Much of the old timber in the valleys was cut and burned in land clearing, and the stands growing on the river bars were washed away when winter floods again caused the streams to change their courses. Some cottonwood was cut into veneer and made into berry boxes or glued up for use as backing in hardwood panels. Prior to the war quite a large quantity was shipped to China and Japan in the form of logs.

To insure a continuous supply for use in paper making, it was evident that something would have to be done. The original stands were going faster than natural reproduction was replacing them.

The first step was to make a survey of all of the available cottonwood land in Washington west of the Cascades. The principal timber areas were located, the individual stands were appraised and, when conditions warranted, were purchased. The river channels were mapped and particular attention was paid to any indications of changing or shifting of river beds.

When all of this data was assembled and a nucleus of company owned timber secured, a definite program of forest management was worked out and it has been carried on with satisfactory results ever since.

Forest Program

● The program is as follows:

1. The company-owned stands are classified as to age and conditions. Except for emergencies only

mature timber is cut. No other timber is harvested unless it has been severely damaged by windstorms or is in danger of being washed away due to floods or changing of the river courses. In one case a few years ago it was necessary to salvage a young stand that had been killed by caterpillars.

2. As soon as a stand is harvested, the ground is replanted. Planting takes place during February and March, or before the growing season starts and as soon as the frost is out of the ground. About 700 to 800 young plants per acre are set out. Under ordinarily favorable conditions these can be harvested in the form of pulpwood at the end of twenty to thirty years.

3. Nurseries have been established where slips are "heeled-in" in sand until well rooted and ready for transplanting. These slips are twigs 16 to 18 inches long which show several well-developed buds. They are cut from young growth and are gathered during the dormant period in November and December.

4. The river valleys are patrolled to locate new river bars for abandoned and cut-over land suitable for growing cottonwood. It frequently happens that a shift in the river will expose a bar. The sand and gravel so exposed is suitable for nothing except growing cottonwood but is ideal for that purpose. The tiny seed pods with their fluffy parachutes attached are blown onto the surface of the streams and washed up on such bars where they take root in the silt deposits overlaying the gravel. In time a thick stand of young trees appears. These seedlings anchor themselves deep in the sand and gravel and, in periods of flood, slow up the silt laden waters, whose burden of sand and dirt settles around their stems, builds up the covering over their roots and provides recurring supplies of nourishment for these fast growing trees. By the purchase of such bars and by arranging to keep cattle away from them until the young trees are tall enough to escape being broken and destroyed, the finest stands of young timber are secured.

5. Every encouragement is given to the owners of river bottom properties to make use of their waste lands by allowing cottonwood to get a start. If the young trees are allowed to grow until their tops are above the reach of cattle, a new pasture land is actually built up around the trees and the trees not only reclaim the land but after sufficient time has elapsed can be harvested by the owner for enough money to repay the taxes he has been out, and if he works up the pulpwood himself, a very good return can be had for his labor.

PULPWOOD CUTTERS at work on the holdings of the Everett Pulp & Paper Company. Cottonwood is felled, peeled and bucked in the woods and shipped in convenient lengths, according to the loggers' equipment.

VIEW OF EVERETT COMPANY'S logs after they have been peeled and are ready for the steam splitter.

Twenty-five years of experience has proved the above program to be effective and worthwhile. The cost of planting and policing, of taxes and investments and the losses which invariably occur, do not make the resulting timber cheap but the results do go a long way towards insuring a supply of raw material necessary to keep the mill wheels turning and the pay checks coming in regularly. Waste land is put to work, the county receives taxes on property which would otherwise be abandoned, and industry is provided with the raw materials it needs.

Cottonwood Is a Poplar

Cottonwood is a species of poplar, and the kind growing here in Washington, Populus Trichocarpa Hastata, or nothern black cottonwood, is the giant of the family.

Soda mills — that is pulp mills which use caustic soda as the cooking agent—in the eastern and north central states use various species of poplar as a source of raw material for their pulp, but nowhere do the trees used grow to the magnificent size attained by our far western specimens. For that reason Everett Pulp & Paper Company, which by the way is the only soda mill on the Pacific Coast, has had to devise and adapt methods of handling its raw material which differ widely from those used by the eastern mills who are accustomed to convert into chips

A VIEW THAT ALWAYS THRILLS A PACIFIC NORTHWEST WOODSMAN. Here are cottonwood seedlings at the Hart Island Nursery of the Everett Pulp & Paper Company. These are actually twigs from the trees which show buds. They are heeled into sand until they begin to root and are then transplanted. In 20 to 30 years they will be harvested as pulpwood.

The Everett Pulp & Paper Company normally averages 60 tons of soda pulp per day from which it makes book, railroad, mimeograph and writing grades of papers. It is the only book paper mill on the Pacific Coast. Many of its products are for direct war purposes.

W. J. Pilz is president and manager of the company. Anson B. Moody is vice president, assistant manager and treasurer. L. P. Fortier is general superintendent. The company maintains sales offices in Everett, San Francisco and Los Angeles.

trees whose average diameter is around eight to twelve inches.

The large trees from virgin stands were formerly felled, bucked into four and one half foot lengths, peeled and split into cordwood size, but now, with few cutters, more production with less labor has become a necessity and not just a goal. By installing a log slip from the river, a cut-off saw and a horizontal steam splitter, it is now possible to take logs in any length from eight to forty feet long and in any diameter from six feet down. Logs are felled, peeled and bucked in the woods and shipped to the mill in lengths most suited to the equipment of the logger. Light equipment will handle even the largest trees if cut to eight foot lengths, while producers with heavy gear prefer to ship logs in the standard twenty four to forty foot lengths. At the mill these logs are cut off in four foot lengths, split to a maximum width of not over twenty inches and sent to the chipper.

Cottonwood is a short-fibered wood which bleaches well and works up into a white, soft bodied, even textured and smooth sheet which, blended with the longer and stronger fibers from fir, spruce or hemlock can be used to produce a wide variety of the finer grades of paper.

Wakeman and Boyce Leave Washington

● Arthur G. Wakeman, prominent Wisconsin industry leader, and Charles W. Boyce, who for many years was secretary of the American Paper and Pulp Association, have resigned from positions in the Forest Products Bureau of the War Production Board.

Mr. Wakeman, after a vacation, will return to his post as production manager of Fox River Paper Co., Appleton, Wis. He was director of the old Pulp & Paper Division of the WPB from March, 1942, until last September, when he became consultant to Harold Boeschenstein, head of the newly formed Forest Products Bureau, while Rex Hovey took over direction of the new Paper Division, a unit of the bureau.

Mr. Boyce is one of the few persons who have been with the old Pulp & Paper Division and now the Paper Division since the inception of that industry organization under Clark Everest in the old Office of Production Management. His last post was special assistant to Mr. Hovey. He plans an extended vacation.

A Correction

In an article in the March issue about the tenth anniversary celebration of the Soundview Pulp Company, we erroneously identified Roger Egan as connected with Bulkley, Dunton Pulp Co. He is no longer, and was not, at that time connected with that company but was, and now is, representing Soundview Pulp Co. in the east.

Bartsch and Mills on Trips

Edward Batrsch, of New York, president of Rayonier Incorporated, spent late March and early April in San Francisco and Seattle and visiting Washington state operations of the company.

E. M. Mills, of San Francisco, president of the executive committee and chairman of the board of Rayonier, spent ten days in March at the Fernandina, Fla., division of the company, conferring with N. B. Gibbs, resident manager and others.

Spokane Leads Paper Salvage

With a recent 500 per cent increase in waste paper salvaging for the Inland Empire Paper Company, the Spokane, Wash., Spokesman-Review claims that area of the country has surpassed all other parts of the United States in paper collections. The Spokane newspaper has carried on a vigorous campaign, with a column given over to news and reports of collections appearing regularly.

Wisconsin Mill Buys Wood On Wash.-Idaho Line

A Wisconsin paper mill buyer came recently as far west as Bonners Ferry, Idaho, to buy wood. He purchased a dozen carloads of lodge pole pine and tamarack at $8.50 per cord, cut in 100-inch lengths and ranging from 4 to 20 inches diameter.

In the nearby town of Newport, Wash., the weekly newspaper asks: "If pulpwood of these species can stand freight charges to Wisconsin, is there any reason why Northwest mills cannot make good use of local stands?"

Marathon Takes Over Hoskin Paper Co.

The Hoskin Paper Company, Menominee, Mich., was taken over April 1 by the Marathon Paper Mill Co., Rothschild, Wis., it was announced by John Stevens, Marathon vice president. R. A. Hoskin, president and general manager of Hoskin Paper Co. is retained in the Marathon organization as resident manager of the mill to be known as the Menominee Division of Marathon Paper Mills Co. Existing sales and purchase contracts are assumed by Marathon but contracts in regard to such matters will continue with Mr. Hoskin.

B. C. Research Fund

● Of considerable significance to the pulp and paper and other forest industries of British Columbia was the announcement in the provincial legislature by Premier John Hart that his government is prepared to spend $50,000 a year for the operation of a research laboratory at the University of British Columbia.

The institution, to be financed partly by the Canadian government, will cost about $600,000 and it is probable that industry will also make appropriations for its maintenance in addition to the government's contribution.

The research project is aimed particularly at the development of new uses for British Columbia's forest products, although it is expected that experimental work in connection with minerals and metals will also be undertaken.

Canadian Pulp Log Exports on West Coast Will Total Only 32,500,000 Feet for 1944

● Export of only 32,500,000 feet (about 58,000 cords) of British Columbia hemlock logs to Puget Sound pulp mills will be permitted during the entire year of 1944.

Under terms of a new U. S.-Canadian log agreement, this amounts to merely another "token" shipment—barely increased over the 30,000,000 feet release of 1943. Prior to the imposition of a Canadian embargo on log exports on Sept. 1, 1942, British Columbia had been averaging pulpwood exports of 150,000,000 feet (nearly 270,000 cords) per year.

The greatly increased use of Canadian hemlock for lumber during the war emergency, the shortage of manpower in the woods and the restriction on operation of British Columbia pulp mills were among the reasons advanced for the reduction of exports to about one-fifth their former volume.

The problem of division of these logs among the Puget Sound pulp mills faced the War Production Board, whose representatives arranged the deal with the Canadian Timber Controller.

The increase of 1944 over 1943 of 2,500,000 feet (about 4,400 cords) provided little more than a couple of days' capacity for the Puget Sound mills.

Penton R. Cancell, special assistant to the director of the Forest Products Bureau, War Production Board, had gone to Vancouver, Wash., in late February, where he made an independent survey of the situation and discussed the possibilities of releases.

He expressed the stand so long taken by the Puget Sound mills that important pulp and paper plants were located in that area on the assumption that they could look to British Columbia for at least a part of their raw material. At the same time, his survey determined that production of all log species in British Columbia continues to be under normal figures and open market loggers had received no substantial relief as to prices whereas lumber prices had increased.

The "token" release is made under the Hyde Park Agreement for the sharing of raw materials by the United States and Canada during the war.

In attempting to reach a fair settlement of this issue over the British Columbia logs—including large timber holdings which are owned by American pulp companies — it was pointed out long ago in PACIFIC PULP & PAPER INDUSTRY that common measuring sticks were needed to determine quantities of logs available and the extent to which pulp mill operations on both sides have suffered from restrictions on production. There are still no common denominators settled upon by the Canadian and United States authorities, and without these it seems certain that a fair settlement of the problem is impossible.

8,000 More Men In Canadian Woods

● Favorable to the Canadian pulp and paper companies has been the excellent wood cutting conditions of this winter. Between 8,000 and 10,000 more men have been in the woods this past season than a year ago, and as a result there has been much larger cut than earlier expected.

In British Columbia the supply of logs is still short, and mill operators were hoping that the Timber Control will not be too generous in authorizing log exports this spring. B. C. Pulp & Paper Co. has been particularly hard hit.

In the east, weather conditions to date have been favorable—cold weather and plenty of snow.

Present indications are that the pulpwood cut will be sufficient to permit increase in pulp products production, more particularly products other than newsprint. It also will permit substantial exports of pulp at the higher prices recently authorized by the U. S. Government.

More Canadian Wood For Eastern U. S. Mills

● The U. S. Office of Price Administration has concluded an agreement with the Canadian Wartime Prices and Trade Board whereby restrictions on imports of pulpwood from Canada will be eased and imports from three Canadian provinces will be placed under United States price ceilings.

The provinces are Quebec, New Brunswick and Nova Scotia. O.P.A. said it is expected the adjustments in prices "will bring about an over-all increase in the production of pulpwood produced in the three provinces" with resulting benefit to both the United States and Canada.

Far West Pulpwood Prices Boosted Following Raises in South and Northeast

● The Office of Price Administration in Washington, seeking to stimulate an increase in pulp production on the Pacific Coast, has authorized increased prices for pulpwood. Similar increases recently were authorized throughout the South and in the Northeastern states.

Prices on No. 2 hemlock, white fir and noble fir throughout the Pacific Northwest were raised $20 to $21.50 per 1,000 ft. (560 ft. equals a standard cord); No. 3 grade $17 to $20 and camp run $19 to $20. Sitka spruce was advanced $3 to $20 per 1,000 feet in both No. 3 and camp run grades but No. 2 spruce was reduced from $30 to $24 for the pulp grades. Wood logs of species other than Douglas fir and cedar were raised from $4 to $11.

Some time ago variations in prices in different Pacific Coast regions were equalized. Pacific Coast wood inventories were reduced in March but are expected to appreciably increase in April due to the price boost.

Pulpwood increases in the northeastern states were in various amounts up to $2.75 per cord. In explaining this increase, the OPA declared some producers had been unable to cover their costs.

In the southern states, from Virginia to Texas, wood production had dropped 35 per cent in January and February of this year below 1943 levels. Pulpwood ceilings were raised 50 cents per cord in certain Virginia and North Carolina regions, 80 cents per cord in South Carolina, Georgia, Florida, Tennessee, Mississippi, Alabama and eastern Louisiana and $1.10 per cord in Texas, Arkansas and western Louisiana.

PULPWOOD—THE PICTURE TODAY

● Pulpwood consumption in this country has increased enormously since 1940, with war needs superimposed on civilian consumption. In 1939 our total pulpwood consumption was 10,816,466 cords. In 1940 it rose to 13,742,958 cords. The pulpwood picture from then until now is told in the following table.

Total Receipts	Consumption	Inventory
1941—16,024,000 cords	16,173,000	(end of 1941) 3,716,000
1942—16,712,000 cords	16,847,000	(end of 1942) 3,376,000
1943—14,816,000 cords	15,171,000	(end of 1943) 2,833,000
*1944— 3,730,000 cords	4,046,000	

(*Estimated figures for first quarter only.)

It will be noticed that each year in the above table consumption exceeded receipts, with a continuous decline in inventory.

Canadian Women Successfully Handle Many Jobs in Pulp and Paper Mills

POWELL RIVER COMPANY women employes. Mrs. M. MORIARTY, Women's Personnel Supervisor, is at the right of the group.

● Increased employment of women has been an effective answer to the manpower shortage problem besetting the entire British Columbia pulp and paper industry. In the primary producing mills alone, about 500 women are now employed.

Pacific Mills, Ltd., at Ocean Falls, the farthest-north mill on the West Coast, has the distinction of employing more women than any other organization in the industry in the western province. Latest figures show their enrollment of women approaching the 200-figure. Powell River Company, Powell River, B. C., employes about 150, the first one of the feminine sex having punched her first time card on September 11, 1942, and now women and girls are found all over the plant.

Sorg Pulp Co., operating a kraft mill at Port Mellon, Howe Sound, was one of the pioneers in employment of women in pulp production. As long ago as July, 1942, women were being added to the crew even though the experiment was treated with a certain amount of derision at the time by outsiders. Sorg is employing between 50 and 60 women in various departments now, some even in the boiler house.

The British Columbia Pulp & Paper Company also has a number of women employed in its mills, and they have taken over jobs in the Sidney Roofing & Paper Company at Victoria.

Young Praises Work

● "We are particularly proud of our girls at Ocean Falls and feel they are doing an exceptionally good job," reports R. H. R. Young, resident manager at the Pacific Mills plant.

Mr. Young recalls that the company made its first attempt to engage women in comparatively large numbers in late 1942 when enlistments in the armed forces, diversion of men to the shipyards and the desire of some others to seek other employment resulted in a critical shortage of labor.

"To counteract this situation," says Mr. Young, "we made a survey of our jobs and found that there were a number of positions which could be reasonably handled by women, although it was necessary to make some mechanical changes and re-group the work to put this into effect.

MRS. M. MORIARTY, Women's Personnel Supervisor at Powell River Company. Her job was created because of the wartime employment of upwards of 150 women and girls at the mill.

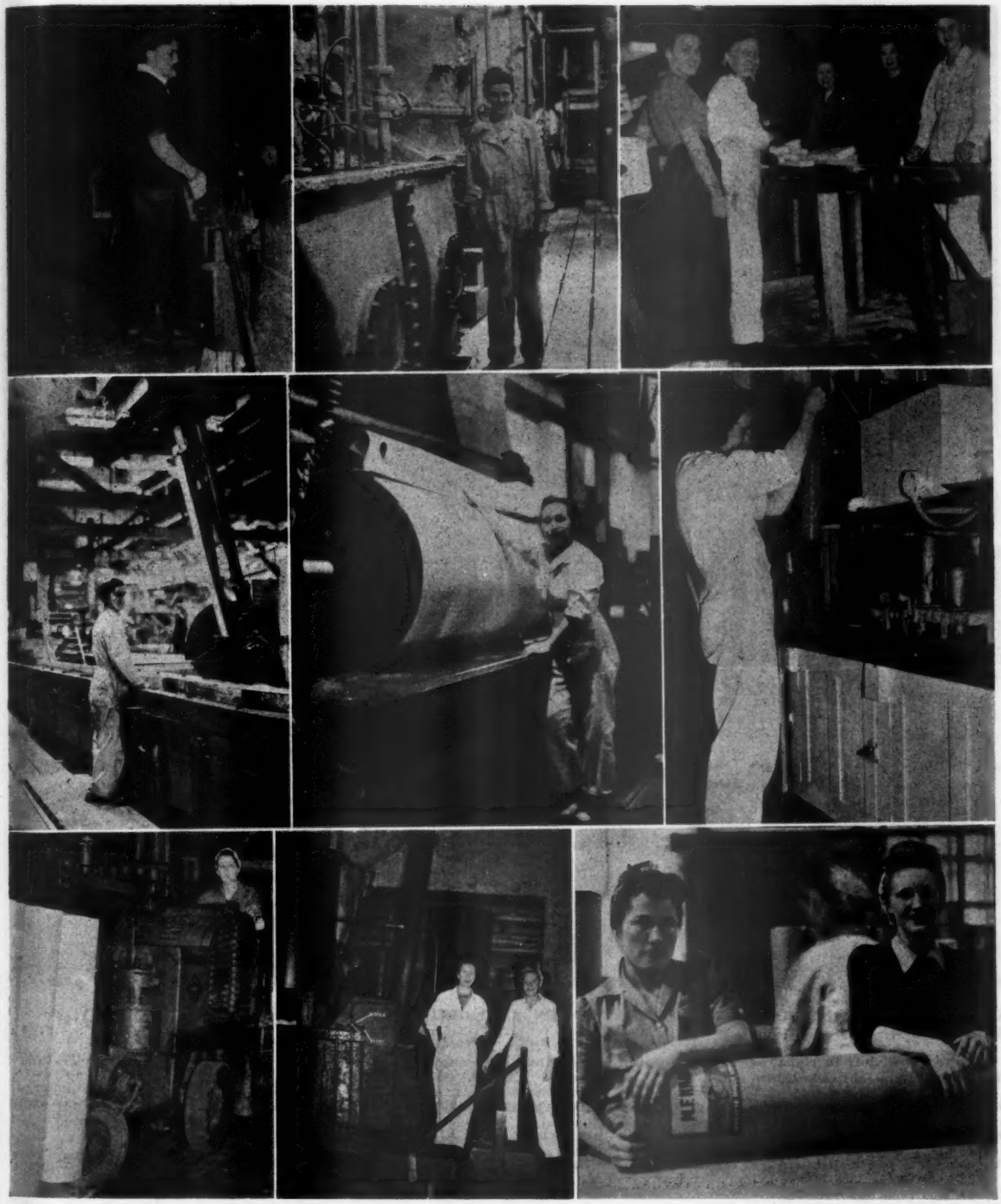
"Fortunately we had just completed a new apartment and we converted this into a girls' dormitory large enough to accommodate 120 girls, giving them a sitting room for each group of six. We equipped this building with all new furnishings and provided comfortable quarters with a matron in charge. Then we built restrooms in the mill to take care of the women in the different departments.

"Our first venture was to employ a small number of women and train them for their respective positions in the mill. It was necessary to sell the foremen on the idea of employing women and several foremen's dinners and meetings were devoted entirely to the discussion of problems arising from the innovation. We also made a study of reports and other literature showing the experience of other industries in the employment of women.

"Generally speaking, many of the foremen were skeptical of the results, but this attitude was soon broken down as the women demonstrated their efficiency. The foremen as well as the women are entitled to a great deal of credit for the fine spirit of cooperation shown. The unions, too, played a large part in the process by helping to obtain the cooperation of their members in the training of women, although they were in a position to assure the men that they would not lose their jobs to women. If the men were moved from their existing job so that it could be taken by women they were given positions as good or better than the one previously held."

Mr. Young says that from a safety standpoint the record has been satisfactory.

"As a safety precaution," says Mr.



PACIFIC MILLS, LTD., at Ocean Falls, B. C., farthest north mill on the coast, has many women holding down former men's jobs.

Top row (left to right)—Edger operators in the spruce mill cutting aircraft lumber; sulphate evaporator operator, and a woman grading and sorting in the spruce mill.

Middle row (left to right)—Swing saw operator; News rewinder helper, and pulp tester.

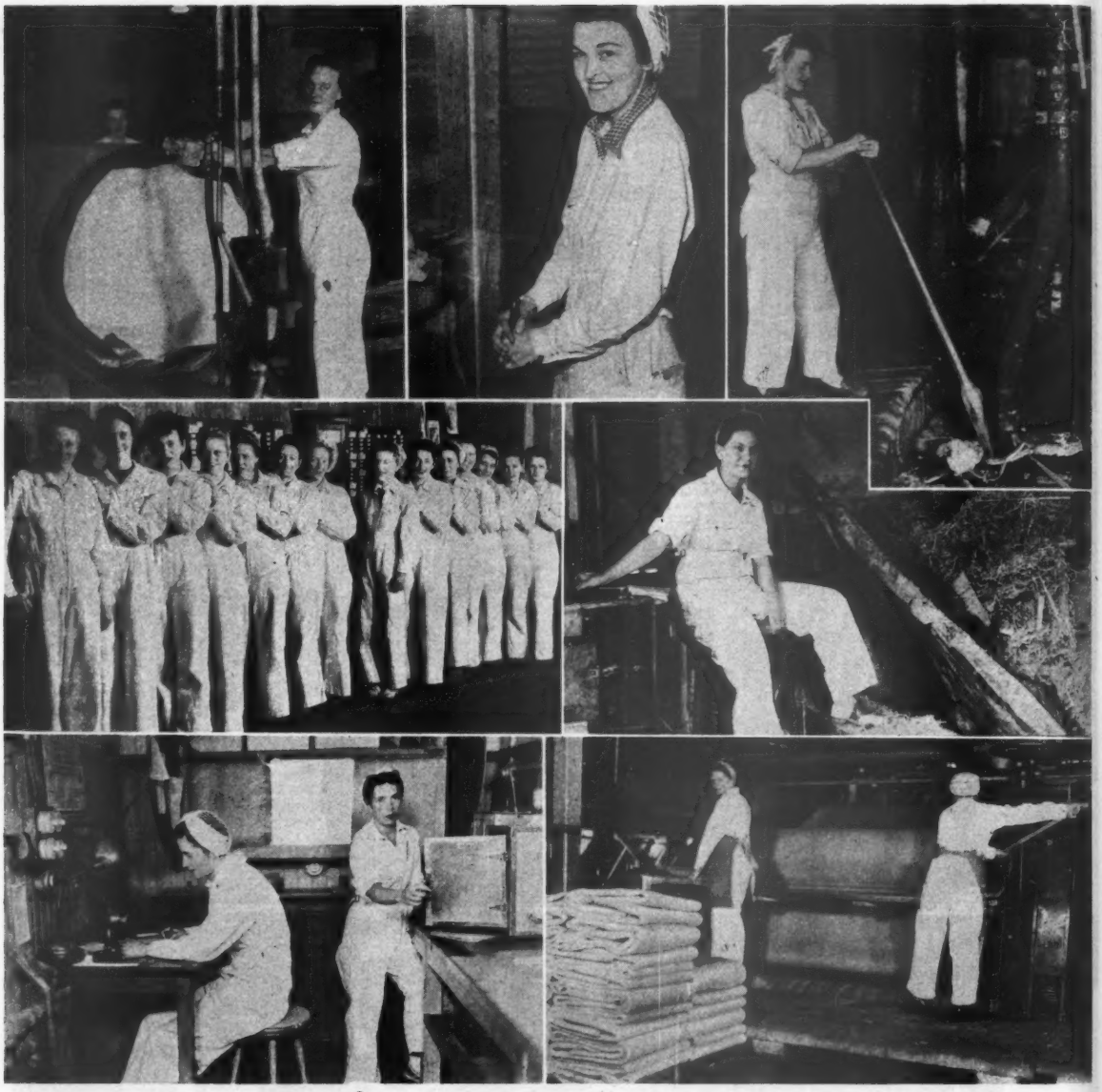
Lower row (left to right)—Hoist jitney operator; news mixing tank tenders, and counter roll wrappers.

Young, "we insisted that women in the mill wear low-heeled shoes and coverall garments and that they keep their hair covered.

"Absenteeism amongst women is not as prevalent as with men," adds Mr. Young. "The turnover has been at a minimum. We had a little more turnover during the past summer because a number of women were returning to seasonal work such as canneries where they had been employed from year to year."

Recreation in the form of softball, bowling, indoor swimming and tennis has been provided, and many dances have been held.

"By and large, women in industry have adapted themselves very well and they



SOME OF THE MANY JOBS HANDLED BY WOMEN AND GIRLS AT THE POWELL RIVER COMPANY, Powell River, B. C.

In the top row, left to right, are a girl capping in the finishing room, another working cant loader control levers and the third one, washing sulphite stock in the blow pits.

Middle left—A group of women employes punching out through the time office after working their shift.

Middle right—Tending hog conveyor control in the sawmill.

At lower left is a testing control room and on the right, another pair are tending groundwood wet machines.

are doing a big job in a fine way," says Mr. Young. "Their morale is good and this, we think, is largely due to the fact that they know they are doing their share in the war effort."

The Pacific Mills' spruce sawmill, which is 100 per cent on war production for aircraft stock, is manned almost entirely by women with the exception of the heaviest work. This includes the setter on the carriage, trim saw operators, edgermen ond down through the entire operation. One of the girls on the carriage has learned to be a sawyer.

Powell River's Experience

● Powell River company decided to experiment with the employment of women about the same time as Pacific Mills. With more than 900 men in the armed services, Powell River has one of the highest quotas of enlistment in British Columbia and shortage of men in the mill became a serious problem more than a year ago.

On September 11, 1942, Miss Mary Cavanaugh presented herself at the time office-clad in neat white coveralls and with a safety cap successfully controlling her curls. She punched the first time card recording the advent of women to the employment of the Powell River mill and made her way towards the subsidiary mill laboratory to become a pulp tester. By the end of the same month 25 women had been enrolled on the payroll and started work in several parts of the plant.

It was quickly realized that special care would have to be exercised in the selection and placement of the increasing number of female employees. In October of the same year, the management appointed Mrs. M. Moriarty as women per-

sonnel supervisor. Mrs. Moriarty, who has since kept in very close and constant touch with the members of the women's division, is qualified for her resposibilities by reason of being a graduate nurse, actively interested in social service work over a long period of years. Her late husband was closely associated with the needs of industrial labor and well acquainted with the intricacies if selective service.

Mrs. Moriarty has lived in many parts of the world, has spent some ten years in the Orient and has had opportunities of studying industrial conditions in many different countries. She spent the last fifteen years in British Coumbia and gained very considerabe knowedge of industrial requirements of the province.

Jobs Are Varied

The nature of the work upon which the women in the Powell River plant are engaged is varied and they have now spread their endeavors into practically every division of the operations, being now successfully operating in the sawmill as cant storage operators, hog machine tenders, sweepers and gang saw and transfer chain button control operators. In the high grade spruce mill attached to the plant, they are engaged as trim saw helpers, on timber tally, pulp block loaders and cant loader controls. The barker mill now employs women on the chain conveyors, the chip bins and for sweeping up. In the groundwood division they are employed as pulp testers, stock washers, wet machine tenders and lap storage, while the sulphite division has women tending the blow pits, the wet machines, the screens and they have also been engaged on the handling of sheets at the dry end of the Kamyr plant. The beater room utilizes women as feeders, beater tenders and have had women on lubrication, while in the finishing rooms they are employed on capping ond finishing rolls, on the cutters and baling of sheet newsprint and on the finishing room statistical records. In the laboratory of the plant women are employed as statisticians, laboratory assistants and on pulp and paper testing. The newsprint division is now using women as broke hustlers, broke beater attendants and as cleaners on the paper machines.

Women are working with the male machine crews at the winder end of the huge paper machines. The steam plant employs women as hog hopper tenders while in the mechanical division they are given jobs as crib clerks and job dispatchers, cleaners to the rigger crew, restroom attendants and were engaged upon lathe and other work in the machine shop. The messenger service of the mill stores is now carried on by women as is the mill office routine.

The aircraft sub-assembly plant—whose operations were described in our Januory issue—was expected to absorb more than 100 women in the several grades of intricate precision work required in the production of sub-assembly of Boeing Flying Fortress parts. The women have shown very marked adaptability in this special work and after a very short period of training have been able to take their places on the production line, which is fast increasing its output as the weeks go by. This is the more gratifying when it is considered that not one of the women had had any mechanical experience before starting their short preparatory course instituted by the Powell River Company in their endeavor to help out in this very essential war work.

The earlier fears as to the practicability of inducting women into the newsprint industry have long since been allayed. They are taking their place in the plant and are applying themselves to the various jobs assigned to them, with every satisfaction to themselves, their supervisors and fellow male workers, with whom the finest spirit of cooperation has been developed and continues to exist.

Before being passed for employment in the mill, each applicant is thoroughly questioned as to their ability and health to carry out the work in the plant and at the same time be able to look after their respective homes and children in the case of married applicants, as it is considered very essential that employees' home torubles and first responsibilities should not be allowed to be set aside for work in the mill and to insure the employee having a free mind to carry on the job assigned to her without fear of having such considerations encroach upon her efficiency and peace of mind when in the plant.

Pete Onkels Counts 4 Now

● Pete Onkels, superintendent of the Pacific Coast Paper Mills of Bellingham, Wash., is wearing a broad smile these days. A fourth son, David, was born to the Onkels household on March 31. Mrs. Onkels is doing nicely as is the little fellow.

The men who are supervising the paper mill are really preparing for a men's world. Bill Dynes, assistant superintendent, now has three boys, and Frank Bloch, shipping foreman, has three boys, too.

Bellingham Bowling Race

● Intense rivalry between the teams of the Puget Sound Pulp and Timber Co. and the Pacific Coast Paper Mills has stirred the Major Bowling League of Bellingham, Wash. The pulp mill keglers were off to a better start than the papermakers but the Pacific Coast Mills team, by winning 13 of 16 starts, is now crowding the pulpers for third place. The paper mill team consists of Pete Onkels, superintendent; Bill Dynes, assistant superintendent; Frank Bloch, shipping foreman; W. Hillier, office manager, and Joe Kemphaus, shipping department. The pulp mill team includes Ed Scribner, fireman; Elmer Peterson, shipping; Walter Groves, painter; Walter Kaufmann, maintenance, and Marion Keyes, electrician.

Writing Paper Quality Grades May Be Eliminated

● To meet writing paper requirements for the first quarter of 1944, approximately 222,534 tons, some of the higher grades and types of paper made in the United States may have to be abandoned, some weights reduced, and more waste paper and filler will have to be used.

Rex W. Hovey, director of the WPB Paper Division, made this statement at a recent meeting of the Writing Paper Manuafacturers Advisory Committee in Washington.

Tops County Taxpayers

● St. Helens Pulp and Paper Company, St. Helens, Ore., with a bill which totaled $36,920.25, paid more taxes in Columbia County than any other firm or individual for the current period. For many years the same condition has prevailed, according to sheriff's office records. Fir-Tex Insulating Board Company of St. Helens paid $16,025.90.

Strict Paper Limitation In Canada Will Continue

●Any hopes of early revision of Order 332 with its attendant restrictions on "unessential uses" of paper in Canada to 25 pounds per month have been greatly dimmed by recent developments.

In turning down "dealer level rationing," as proposed by six industry associations in a brief filed with the Ottawa government, Printing Administrator John Atkins stated that the order was based on a knowledge of the immediate situation not available to the printing trades, and that it is not reasonable to appraise the merits of Order 332 until it has been in force for a period.

The Stationers Guild of Vancouver, B. C., was one of the organizations which filed a brief with the administration. The brief claimed that printers' and lithographers' advertising uses only one per cent of book and fine papers and that the paper saving was thus small and insignificant.

"More paper cannot now be made available for non-essential and less essential purposes without jeopardizing the supply of essential printer matter," said Mr. Atkins.

Paper Order Affects Many Canadian Businesses

● A considerably wider range of Canadian business than first expected will be affected by the Wartime Price and Trade Board order No. 332 restricting the use of paper for other than certain essential purposes.

Engraving, commercial art work and related trades will all be hit in one way or another. Some firms, the bulk of whose business comprises production of commercial art displays, face the necessity of a rapid shift.

Canadian printing interests, through an industry association, are expected to make representations shortly to John Atkins, Publishing and Printing Administrator, concerning what are regarded as inequitable features of the order.

Those affected claim that curtailment of paper used for promotional selling purposes is much more sever than that which applies to the printing of papers and periodicals. But it is pointed out that paper publishers have been rationed for more than a year, during which time there was not restriction on promotional material.

Newsprint Production

● Production of newsprint in Canada during February, 1944, amounted to 240,005 tons and shipments to 227,387 tons, according to R. S. Kellogg, News Print Service Bureau. Production in the United States was 53,852 tons and shipments 54,033 tons. The output in Newfoundland was 21,586 tons and shipments were 15,278 tons, making a total North American production of 315,443 tons and shipments of 296,698 tons. This compared with total production in February, 1943, of 299,961 tons and shipments of 299,182 tons. There was one more working day in February, 1944, than in February, 1943.

Mrs. Hughes Better

Mrs. Victor Hughes, wife of Vic Hughes, Secretary of the Pacific Coast Paper Mills, was in Rochester, Minn., recently recovering from a major operation and is expecting to return home soon.

Revenue Bill, Passed Over FDR Veto, Will Encourage Far-sighted Forestry

WHAT PRESIDENT ROOSEVELT SAID IN HIS VETO MESSAGE ABOUT THE TIMBER TAXATION AMENDMENT:

"The lumber industry is permitted to treat income from the cutting of timber, including selective logging, as capital gain rather than annual income. As a grower and seller of timber, I think that timber should be treated as a crop, and therefore as income when it is sold. This would encourage reforestation."

● The new Revenue Bill, passed by Congress over the veto of President Roosevelt, contains an amendment which is expected to greatly encourage the wise husbandry of national forest resources, including pulpwood.

A number of forestry industry leaders have described this so-called Bailey amendment as the greatest impetus ever given to good forestry by federal action. Pulp and paper industries with extensive forest holdings are expected to benefit.

Leo S. Burdon, general manager, Soundview Pulp Co., Everett, Wash., commented that the amendment will make it possible for a number of the large timber holders to make provision for additional plans for reforestation which "were not economically possible in the absence of this form of legislation."

Maj. David T. Mason, outstanding forest engineer of Portland, Ore., said the amendment removes "serious inequities on the federal tax laws which for a number of years have been the greatest obstacle to private forestry."

The new Revenue Bill provides for taxing the gain from the harvesting of timber upon a capital gains basis under which the maximum net rate is 25 per cent. In contrast, under the previous Revenue Acts, such timber gains have been taxed in the year of harvesting as ordinary income at rates which ran as high as 93 per cent in the case of individuals, and up to 81 per cent in the case of corporations, notwithstanding that such gains in growth or value of timber may have been accumulated over a long period of time.

Application of income tax rates to forest harvests was unfair and often destructive because it mistakenly assumed that the proceeds from such a harvest represented a single year's earnings instead of having been an accumulation over a considerable number of years. The capital gains basis, however, is looked upon as a reasonable formula for counterbalancing the fact that timber values are not created in one year but in many.

Under the former Internal Revenue code, individuals or companies which sold their timber on the stump outright to others were permitted to figure the tax on their gain upon a capital gains basis, but prior to the new amendment, if the same individuals or companies cut their own timber and sold the products therefrom, or sold their timber on a cutting contract basis, retaining ownership of the land and of young timber not ready for harvesting, their gain on the timber itself was subjected to the high rates applicable to ordinary income.

The new legislation, as described by Major Mason, "establishes wise public policy which will strongly encourage the growing of trees, and the creation and expansion of 'tree farms.'

"In growing corn, wheat or other crops the American farmer must exist in an economic environment in which probable returns will sufficiently exceed probable costs (including losses) to induce him to remain in the business of farming. The corn farmer in the course of a year goes through the full cycle of plowing, sowing, protecting, harvesting and selling his crop. Each year he completes an operation and knows how he is getting along financially.

"For the tree farmer, however, the time element is enormously more important than for the corn farmer. From the seedling to the merchantable tree the time space may be as little as 25 years under favorable conditions, or more than 100 years. During this long growing period the tree farmer is exposed to many hazards, both physical and economic—and exposed without any practicable form of insurance."

Mr. Burdon, commenting on past conditions, said: "The major timber holders today are those who acquired holdings for the most part prior to the present war, and at stumpage prices more in keeping with what they should be from a long range point of view."

Continued the Soundview Pulp Co.'s general manager. "The log price structure has not afforded ample returns to operators in any number of directions, and this notwithstanding that stumpage

SENATOR BARKLEY'S REPLY TO PRESIDENT ROOSEVELT'S STATEMENT ON TIMBER TAXATION VETO:

"The President refers to the lumber industry as being permitted to treat income, from the cutting of timber as a capital gain rather than as annual income, and cites that provision of the bill as a loophole in favor of special privilege. In all fairness to the Congress and to the people who read the President's message, it ought to be stated that under the present law if a man owns a tract of timber and sells that timber, or sells the land on which it grows, to another person, company or industry, he is allowed under the law to pay taxes upon it as capital gain, not as annual income, for the year in which it is sold.

"The difference between the tax provisions relating to capital gains and those relating to annual income are technical and are not understood by the average citizen or by many experts.

"I have neither the time nor the disposition to go into an explanation of this difference at this time. Suffice it to say that while under the present law the owners of timber land may sell it to a lumber or milling company, or to anyone else who moves in upon it and cuts the timber and sells it, and are allowed to pay taxes on the basis of a capital gain, the person who buys, cuts and markets the timber pays taxes on an annual income basis because he is in that basis. And in order to arrive at his income for that year upon his operation in that or any other field, he is allowed to deduct the costs originally, together with the expenses of operation, to arrive at the net income upon which he will pay the tax.

"But if the owner of that same land and that same timber, instead of selling it to another, moves a sawmill upon it and cuts it himself and sells it himself in the market, he is taxed upon it as income for that year. In other words, if he sells it outright to another, he is taxed in one way. If he cuts it himself he is taxed in another way. This discrimination was recognized by the committee as an injustice to owners of land containing timber.

"I voted for this timber amendment as a member of the Finance Committee. I voted for it on the floor of the United States Senate. I signed the conference report containing it, as one of the conferees on the part of the Senate. For that vote I make no apology to any human being. I did not vote for it in order to create a fantastic or imaginary loophole to allow someone to escape taxes. I voted for it is an act of justice to those who grow timber over a period of a generation or half a century, and who are entitled to equal treatment, no matter in what manner they dispose of the timber.

"The President, in order to justify his treatment of this amendment, cites his own experience as a timber man, and from his experience he regards such income as constituting annual income. I do not know to what extent the President is engaged in the timber business. I do know that he sells Christmas trees at Christmas time. They are, no doubt, of easy growth and short life, and I have no doubt that the income from the sale of them constitutes annual income to any other persons engaged in a like enterprise.

"But, Mr. President, to compare these little pine bushes with a sturdy oak, or a gum, or a poplar, or a spruce which requires a generation of care and nuturing to produce in the forest out of which no annual income is derived until finally they are sold, would be like comparing a cricket to a stallion."

costs have been at prewar prices. On top of all this is the fact that taxation has taken, and continues to take, such a large percentage of the returns even at these low stumpage prices leaving very little and in some cases nothing for future provision in the matter of reforestation and timber conservation.

"The Dominion to the North of us," he said, "has had a much more equitable basis of taxes from the standpoint of a timber owner than has prevailed in this country, and the present U. S. Law is a step in the right direction."

Zellerbach Paper Co. Employes Get Pins

● Amid many laughs and a few tears as the old timers were congratulated, Harold L. Zellerbach, president of the Zellerbach Paper Co., San Francisco, presented service pins to 10 employees of the San Francisco division of the company at an informal ceremony April 5.

Those honored were: Paul Anderson, credit manager of the San Francisco Division, 20 years; Albert S. Page, salesman, 20 years; Mrs. Martha Miller, secretary, 25 years; Fred Breyman, manager of the twine and cordage department, 25 years; Mrs. Elizabeth Sherman, head of the mail department, 30 years; Carl Conrad, salesman, 30 years; Ed Smith, salesman, 35 years; Sumner Caldwell, head of specialties department, 40 years; Milton Colton, assistant printing paper sales manager, 40 years; James R. Davis, salesman, 45 years.

Frederick E. Moskovics Joins A. O. Smith Corp.

● Fredrick E. Moskovics, war materiel expert, has accepted appointment as industrial consultant to the A. O. Smith Corporation of Milwaukee, Wis.

For the past three years Mr. Moskovics was technical advisor to the Supervisor, Army Air Forces, where his cooperation with industry was one of the major factors in this country's phenomenal plane production. His industrial knowledge, based on more than forty years of technical experience in industry, was valuable in solving many of the bottlenecks which hampered progress in the first few months after Pearl Harbor.

Berkheimer Operates Without Felt Machine

● J. E. Berkheimer, president of the J. E. Berkheimer Manufacturing Co., 2928 South M St., Taoma, Wash., has given up hope of obtaining a roofing felt machine for the duration. His plant was destroyed by fire October 28 and included loss of the only felt machine in western United States north of San Francisco.

He is now buying felt and building paper and saturating it. He also sells deadening felt, roof coatings, etc.

His felt mill superintendent, Charles Humble, has gone to Los Angeles to be assistant production manager at the Pioneer-Flintkote mill there.

Home on Furlough

Tch. Sgt. Ray Green, formerly employed by the Puget Sound Pulp & Timber Co. in the sulphite department, was home recently on furlough after two years in the Canal Zone. Ray is the brother of Gerald Green, chemist with the pulp mill.

Pacific Northwest Pulp Shipments Will Increase 20% In 2nd Quarter

● Predicting a 19.7 per cent increase in carloadings of pulp for the second quarter of 1944 from this area, the Pacific Northwest Advisory Board released its quarterly forecast at its annual meeting in Portland, Ore., on March 23.

An increase from actual car loadings in the second quarter of 1943, of 5204 cars, to an anticipated use of 6229 cars during the April-June period of 1944, was forecast.

H. E. Kerry, general traffic manager of Rayonier Incorporated, Seattle, as executive secretary of the board, said this increase would stem mainly from resumption of production by the St. Regis company pulp mill in Tacoma, Wash., although some rise would result from allocation of more logs to other pulp plants. He recalled the unusual accuracy of past estimates, with one instance of a three-car difference in an estimated loading of 5007 cars.

Mr. Kerry said lumber and forest products constitute 65 per cent of all loadings in the three Pacific Coast states involved, with a 3% increase from 179,807 to 187,070 cars, because production "was still feeling the effects of unusual weather conditions that prevailed in January and February of 1943, when the almost unprecedented snowfall slowed logging operations in Oregon and Washington to a mere fraction of normal."

Mr. Kerry was promoted from executive secretary to vice president of the board for 1944.

Joins Swenson

George H. McGregor, until recently senior chemical engineer in the Pulp and Paper Section of the U. S. Forest Products Laboratory, Madison, Wis., and formerly sulphite superintendent in a Pacific Northwest mill, has joined the staff of Swenson Evaporator Company, Division of Whiting Corporation, Harvey, Ill., in the capacity of manager of their pulp mill equipment dept.

Mr. McGregor will have charge of sales of Swenson equipment for the paper and pulp industry, including complete black liquor recovery systems, evaporators, pulp washers, etc.

● F. LOWELL GARRISON succeeds PAUL C. WILMORE as public relations representative for the General Electric Company in the Pacific Coast area, it is announced by R. S. PEARE, manager of the company's publicity department, Schenectady. Mr. Garrison's headquarters are on the eighth floor of the Russ Building in San Francisco.

Mr. Garrison was born in San Jose, Calif., and graduated from the University of California in 1929. He immediately joined General Electric.

Hawley Company Offers Job Instruction Classes

● The Hawley Pulp and Paper Company, through the cooperation of the War Manpower Commission, Training Within Industry Division, has launched a training program for its employees.

Harry Fromong, an employee of the Hawley Pulp and Paper Company, has been selected to instruct the employees in a job instruction and job relations program. Mr. Fromong has attended the War Manpower Commission's Training Within Industry Institute and through the completion of this work, is now qualified to instruct.

Job instruction training was started June 7, 1943, and 86 employees completed and were certified on job instruction.

On August 23 job methods training was started and 36 employees have completed the course.

Job relations training was started December 13, with the first group completing this program December 22.

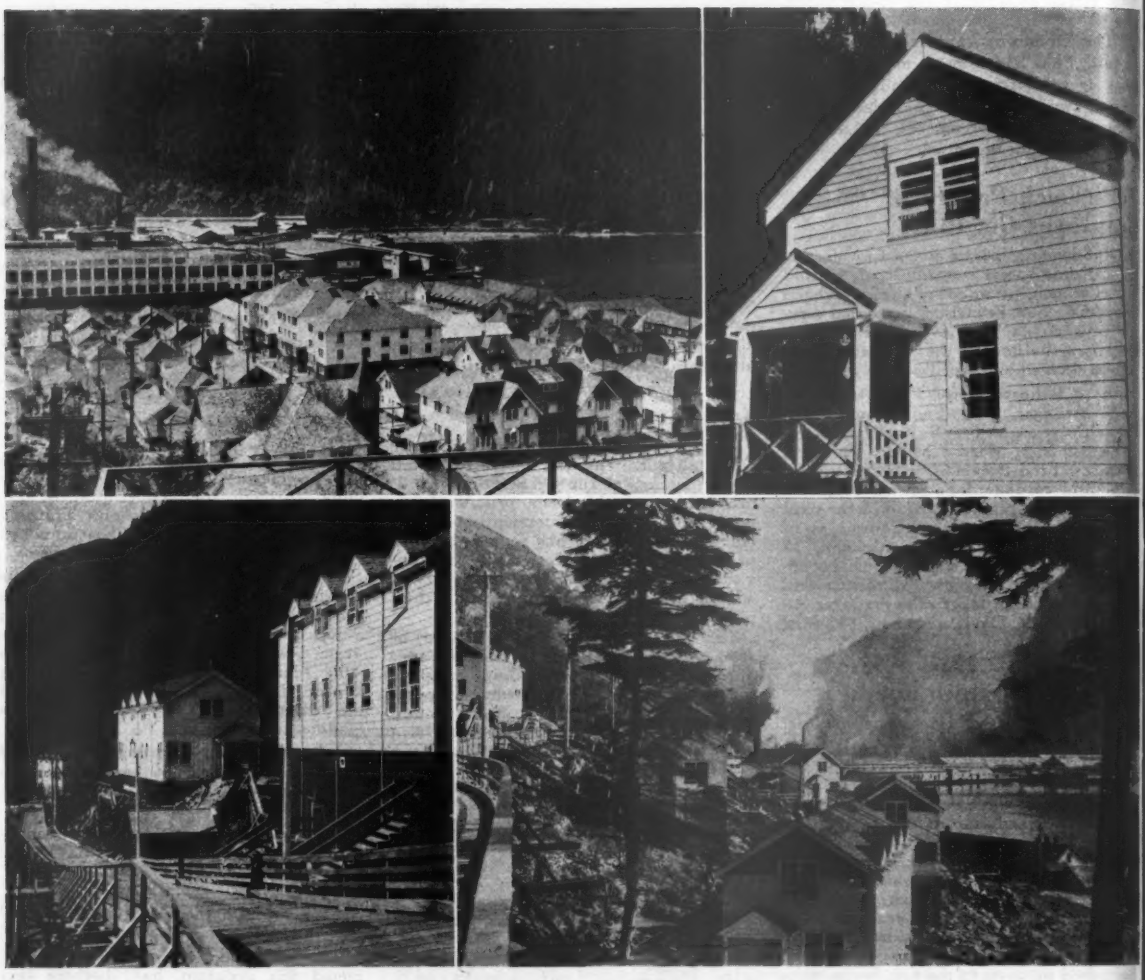
The men and women, who have completed this program, have become very enthusiastic. They also now say that after this instruction, it is easier to train new employees coming on the job and their reasons for this are that with the job breakdown, they understand their work better and they have more confidence in themselves to instruct new employees and, therefore, the efficiency of the workers is more rapidly obtained.

From the experience that other companies have had with this training program, the Hawley Pulp and Paper Company is looking forward to greater plant efficiency by bringing its skilled and unskilled employees to a better understanding of their work and its relationship to production.

Marines Citation

Crown Zellerbach Corporation as a corporation has received a handsome war effort citation from the United States Marine Corps Recruiting District for "valuable service to the United States in the recruiting program of the United States Marine Corps."

Many Improvements Are Made In Ocean Falls Housing Extension



UPPER LEFT, A GENERAL VIEW OF OCEAN FALLS, B. C., LOOKING TOWARD THE PLANT OF PACIFIC MILLS, LTD., which is a highly diversified producer, making news, kraft and sulphite products. Other views show the new apartments and duplex houses built for employes in the $1,000,000 housing extension program.

PACIFIC MILLS, LTD., has recently completed a $1,000,000 housing extension program at Ocean Falls, B. C. This development was started in the spring of 1940 with the building of a 42-suite apartment. On completion it was discovered that a housing shortage still prevailed, and another 42-suite apartment was started.

International complications brought about by Japan entering the war necessitated the laying off of all the company's Japanese employees. The Japanese houses, about 75 of them, were not suitable for Occidental use and were burned down. In their place 35 modern steam-heated duplex houses were built.

The company's hospital at Ocean Falls was also enlarged recently to accommodate 18 general patients and 70 maternity cases. This changeover also included the building of a new operating room and a physiotherapy room. Tying in with the hospital change, a duplex house was converted into a nurses' home. Steam heat was installed and, generally, it has given the nursing staff a very comfortable home, located one block from the hospital.

Topography of Ocean Falls makes it difficult to find space for additional large buildings. So, when the second apartment was started, it was necessary to remove the tennis court to provide the space required. Two new tennis courts were then built on the side hill, located close to the high school.

A third apartment building comprising 24 suites was built, but before it was ready for occupation it was found that, due to shortage of manpower, it would be necessary to employ a large number of women. The building was then converted into a grils' dormitory which provides accommodation for 132 beds.

To service these new buildings called for considerable outlay besides the construction. For instance, 1,700 feet of trestle roads had to be built, 300 feet of trunk sewers, 680 feet of water mains, 2,700 feet of overhead steam lines and new power service installations.

A Housewife's Dream

● This accommodation has all been constructed with a thought to comfort, convenience, adequate floor space, and to rent for a reasonable rate. For instance, the average apartment has 675 square feet of floor space, a tile bathroom with Pembroke bath and shower, a 3-burner automatic oven electric range and a 4.4 cubic foot Frigidaire. The rent for a suite as outlined runs at $36 a month, steam heat included and electricity at a very reasonable rate extra. The apartments also have a laundry room in the basement, which is equipped with washing machines, wash tubs and a quick-drying room.

Likewise, the duplex houses have 960 square feet of floor space, consisting of a kitchenette, laundry room and living room downstairs, two bedrooms and bathroom upstairs. They are equipped with an electric range and rent for $34.50 a month, including steam heat and hot water.

The duplex walls are finished in hard plaster, and have well finished floors, banisters mahogany trimmed. A large amount of cupboard space has been provided — the average housewife's dream.

The kitchens have attractive varnished plywood cupboards with a cooler. Laundry trays are located in the laundry and utility room. Window designs were changed in the houses. Some have three in the front of the living room and one on the end wall, while other houses were built with two windows on the front and side living room walls. All woodwork is light varnished, and the interiors are bright and attractive.

Ocean Falls can now provide accommodations for 474 families, (apart from single men's quarters), which roughly is made up as follows: one hundred and forty-six steam-heated apartment suites, three hundred and twenty-six houses, ninety-eight of which are provided with steam heat.

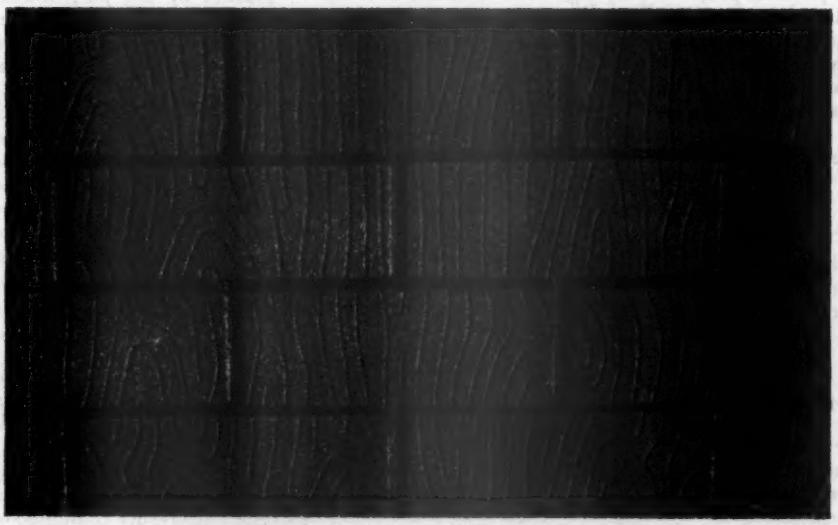
The actual construction program is now completed. However, there is still considerable work to be done when the manpower is available. The grounds in front of the duplex houses will have to be terraced and landscaped. There are also several of the Japanese bunkhouses and the messhouse to be removed. All of this involves considerable labor, which cannot be spared at present.

Flintkote Company, Pioneer Division, Produces A New Roofing Felt With Wood Grain Appearance

● Newest in the roofing line produced by the Flintkote Company, Pioneer Division, Los Angeles, is their Cedartex Thikbut strip shingle, featured by double-thick tabs and embossed to resemble wood grain lines. The shingles have two layers of coating asphalt and mineral surfacing for extra protection, and come in strips 12 inches by 36 inches in size, three shingles to the strip.

Because of wartime limitations there is at present only one weight, 210 pounds per square (100 square feet), 80 shingles to the square, with five-inch exposure. Sixty-five per cent of the weight is on the exposed area.

One of the main reasons for developing this new product was to achieve a very attractive appearance through the wood grain effect and the deepened shadow lines created by the double-thick tabs. Colors are enhanced by blending. Tapestry blend is a combination of green and blue with buff mineral granules.



Newest Flintkote product—a long-fibered felt strip shingle.

These colors are but the start of a series that will be produced when supply sources of granules become more stable. Included in the future color scheme are Sierra Green, Canyon Red, Black, White, Aluminum and Dusk Blue. Production is being increased as fast as priority on other products will permit.

The basic material of Thikbut shingles is long fibered felt, produced in the company's own mill. The porosity of the felt is high, so it will absorb the maximum amount of asphalt, yet it also has a high tensile strength to withstand the stresses of weather and give long service.

Asphalt is the weatherproofing element. Two types are necessary, one for saturating the felt and the other for coating. Supersaturating is achieved by ingenious mechanical methods. Supersaturating seals 95 per cent of all the felt pores, while ordinary saturation seals only 80 per cent.

Asphalt coating is applied to seal in the saturant, protect the felt base from the weather and retain the mineral surfacing. The processed surfacing is applied while the coating is still hot, being embedded in the coating by pressure and adhesion. By employment of a special process, the shingles are double thick on the exposed tabs. They have a laminated overlay of asphalt coating and mineral surfacing. These surfacings consist of vari-colored mineral granules, which are important as a fire retarder. Special type embossing rolls do the finishing work.

Following the various manufacturing operations, the product continues on a conveying system composed of a series of loopers, allowing time for it to cool and dry before it is cut into shingles Thikbut shingles are packed in cartons for easy identification in the dealer's store and for protection of shingles in shipping and on the job.

Pioneer Flintkote has been producing roofing since 1888. The Los Angeles plant now covers twenty-five acres and is one of the largest and most modern roofing factories in the country. Other products are asphalt, asphalt emulsion, roof coatings and cements, boxboard and chipboard, corrugated and solid fiber containers.

I. J. Harvey is president of the company, L. M. Simpson is vice-president and general manager, and William A. Kinney is production manager of the Los Angeles plant. Glen A. Phillips is superintendent at Los Angeles, John Van Ounsem is techincal director. M. E. Campbell is chief chemist and Dr. John J. Stanko is research director.

Research Activities Hold Promise For Resin-Pulp Combinations

By JOHN DELMONTE

**Technical Director,
Plastics Industries Technical Institute,
Los Angeles, Calif.**

PRESAGING the growth of a new activity, resin-pulp combinations give every indication of attaining large volume production. While such activities are on a rather small scale at the time of writing, considerable importance may be attached to the research activities in this direction. In fact, the writer feels certain that the time is not too distant when molders of plastic materials will turn to paper and pulp manufacturers for their larger molding blanks and preforms. The pouring of wood flour-filled, or fabric-filled phenolic molding powders into molds entails numerous production difficulties in proper predistribution in large molds before closing the press and basic problems in attaining uniform resin-filler distributions.

Resin pulp preforms should go a long way toward overcoming these handicaps by permitting a shorter molding cycle by reducing press closing time, and better physical properties through more intimate fiber-resin relationships. Fundamentally, less resin should be required now inasmuch as its function will chiefly be to bind the fibers into a strong, sound, coherent structure, whereas in the technique of molding powders and granules, it had also to provide the flow characteristics to distribute the molding compound to all extreme dimensions of the mold.

There remains a tremendous amount of work still to be accomplished in the resin-pulp developments.

To the writer it appears as though the possible developments have scarcely been uncovered and to those farsighted and aggressive paper and pulp manufacturers belong the fruits of the resin-pulp activities.

New Resins Sought

● Contributions from within the plastics industry will appear either in the guise of new promising resins, or in new techniques of applying these resins to the pulp. Reviewing the prior art of plastic materials and pulp, one will observe the greatest attention being devoted to thermosetting resins such as phenol-formaldehyde urea-formaldehyde, and melamine-formaldehyde resins. The thermo-setting materials have been long prominent in compression molded and laminated articles. Phenolic resins have enjoyed the highest distribution because of their lower cost, superior mechanical and chemical properties. They are available either in a water soluble variety or a higher molecular weight alcohol soluble variety. The water soluble types have been employed in additions to wet pulp or the formed dry pulp sections. On the other hand, alcohol soluble types are used also to impregnate the dried pulp sections alone. In adding the water soluble resin to the head box, fairly high loss is experienced in the resin in drainage from the screens, though this is recoverable if properly planned.

Treatment of the formed pulp sections with resin has depended a good deal upon the availability of resins with good penetrating qualities. There are several of this character which have been tested in the writer's laboratories, and which show promise of converting pulp preforms over to hard durable articles.

In anticipating the future of plastics-pulp relationships, one should not be too limited in their selection of only water soluble materials to be added to the head-box of the machine. The writer has experimented with other non-aqueous resins which are equally as effective in adaptation to pulp slurries as the water soluble varieties. This would suggest the fact that there are many types of resin-pulp combinations possible. In addition to the molding field, the resin pulp combination should be of definite interest in the laminating field where thick sections can be built up quite readily without the many hundreds of resin impregnated papers otherwise required for grade X, XX, or XXX paper base phenolic laminates.

Plastic Type Is Important

● In this general introduction to the expanding field of plastics and pulp, it is well to recognize some of the problems lying ahead of us. The random selection of plastics by the pulp industry for application to their materials can sometimes be a serious mistake. Trained plastics technologists should be called into consultation on the problem. For example, phenolic resins themselves constitute a big field—there are oil soluble types, water soluble types, alcohol soluble types, liquids and solids, and balance of the correct degree of modification with the correct molecular weight is essential to ultimate success. Further, there are effects of higher temperature in processing plastic pulp combinations which may form decomposition products that may affect the pulp. There are other pH relationships critical to either one of the components. These are only a few citations.

The quantity of plastic material to be added to the pulp is determined by the ultimate application. Amounts as small as 3 to 5% melamine-formaldehyde for example, have greatly increased the wet strength of paper, and there are many packaging materials for overseas service which find them quite serviceable. On the other hand, moldable formulas may require up to 50% resin content if the desired strength and chemical resistance is to be attained. Recent experiments on phenolic resins combined with a sulphate pulp show a critical range around 35% resin content. Lower percentage result in a much increased water absorption, while higher percentages will greatly decrease impact strength of molded parts. In consequence there have been some developments in which the core pulp stock is of low resin content while the outermost layers are of high resin content to attain gloss and necessary chemical resistance.

While pulp pickups on vacuum screens are substantially limited to uniformly thick deposits, there is generally sufficient adjustment during molding to permit slight variations in thickness of molded parts. While the processes are adapted to large molded parts, they have also shown excellent promise in extremely thin sections (several mils thick) which have been deemed impractical if produced from molding powders.

Plastics, pulp and paper relationships appear to be natural combinations. There is every reason to hope that this will continue to a greatly expanded, profitable activity.

Coast Superintendents and TAPPI Groups to Meet in Portland June 3

● The Pacific Coast Division of the American Pulp & Paper Mill Superintendents Association and the Pacific Coast Section of TAPPI will hold their Annual 1944 Joint Meeting for one day and evening on Saturday, June 3, at the Multnomah Hotel, Portland, Ore.

These far western groups of the two big operations and technical organizations of the industry have been on extremely "short rations" as far as meetings are concerned since the war began. Compared with their "sister" divisions and sections of the east and middle west, which are still able to get together for monthly dinners or other regular meetings, the Pacific Coast men and women have had only rare opportunities to meet.

In peace time, the Annual Joint Meeting would be of two or three days' duration. But again this year, as in 1943, it will be streamlined to one day and evening.

At least two interesting papers already are being lined up but as this issue went to press, it was too early to disclose the titles as arrangements for them had not been entirely completed.

A. G. "Buff" Natwick, asssitant resident manager of the Camas, Wash., division of Crown Zellerbach Corp., has been appointed general chairman of the June meeting by Charles G. Frampton, superintendent, Fernstrom Paper Mills, Pomona, Calif., and Clarence A. Enghouse, assistant resident manager, West Linn, Ore., division, Crown Zellerbach Corp., who are the respective heads of the far western superintendents and TAPPI organizations.

Serving under Mr. Natwick will be these committee chairmen:

Other Committees

Program: Sam A. Salmonson, assistant superintendent, Soundview Pulp Co., Everett, Wash., who is first vice chairman of the superintendents' division, and Erik Ekholm, general superintendent, Puget Sound Pulp & Timber Co., Bellingham, Wash., who is vice chairman of the TAPPI section.

Entertainment and Publicity: Robert M. True, General Dyestuff Corp., Portland, Ore., who is secretary-treasurer of the TAPPI section.

Finance: Harry H. Richmond, Electric Steel Foundry Co., Portland.

Hotel Reservations: Zina A. Wise, Griffith Rubber Mills, Portland.

Long distances between industry centers on the Pacific Coast and the extreme labor shortage and shortages of food and facilities in western cities have made it impossible for monthly meetings to be carried on by TAPPI. Since the last Joint Meeting in Portland last May 22, TAPPI has had only two dinner meetings. Ever since the Pearl Harbor raid occurred in the midst of their winter meeting in 1941 the Coast division of the superintendents has abandoned those winter sessions and met only once each year—at the Joint Meeting.

Because the meetings are so rare, it is expected a goodly number will take advantage of the opportunity to meet their associates next June 3 in Portland. At least this hope is expressed by both Mr. Frampton and Mr. Enghouse.

There will be business sessions in the morning, a joint luncheon, a technical session in the afternoon and a dinner and dance in the evening.

Irwin H. Copeland Dies In Florida

● Irwin H. Copeland, of Montreal, manager of manufacturing operations for the Canadian International Paper Company and vice president of the New Brunswick International Paper Company, died following a heart attack on February 28 at North Miami Beach, Fla. He had been there for some weeks to recuperate from illness.

Born fifty-two years ago at Argyle, N. Y., Mr. Copeland was educated at Glens Falls Academy and at Mercersburg Academy. His entire business career was spent in the pulp and paper industry. He first served with Finch-Pruyn and Company, Glens Falls. Moving later to Canada, he was employed by a number of paper companies.

Simeral Is Better

R. W. Simeral, vice president and general manager of Fir-Tex Insulating Board Company, St. Helens, Ore., has returned to his duties after an extended illness, but he will spend only a short time at his desk each day.

Brainerd Becomes Coos Bay V. P.

FORREST W. BRAINERD (left), who has been Staff Technical Director for nearly two years for Scott Paper Company and its affiliates, was recently elected Vice President of the Coos Bay Pulp Corp., the subsidiary which operates pulp mills in Empire, Ore., and Anacortes, Wash. Mr. BRAINERD, who has made frequent trips to the Pacific Coast to deal with technical matters and who is well known nationally in TAPPI circles, is shown here at his first meeting as an officer of the Coos Bay Pulp Corp.

J. L. OBER (center), recently became President of the Coos Bay Pulp Corp., and also Vice President in Charge of Operations of the Scott Company, succeeding in both positions WILLIAM S. CAMPBELL, who has retired in Florida as a result of prolonged illness.

C. WYLIE SMITH, of Empire, Ore. (right), is Vice President and General Manager of the Coos Bay Pulp Corp., directing operations at Coos Bay and Anacortes. He went to Chester, Pa., for this meeting after successfully arranging the reopening of the Anacortes mill last fall after it had been shut down for nearly a year as a result of WPB orders.

Limits in Effect of Acid Concentration--Digester Pressure Relations in Sulphite Pulping

By W. F. HOLZER
Central Technical Department,,
Crown Zellerbach Corp., Camas, Wash.

● There are two common ways to increase the rate of a chemical reaction, by raising the temperature or by increasing the concentration of the reactants. In many reactions it is of little importance which method is used. However, in the case of pulping wood by the acid process, where elevated temperatures are injurious both to pulp strength and yield, it would seem desirable to use the latter method. This has been recognized, at least in some quarters of the paper industry, for many years.

In a sulphite cook the chemical whose concentration controls the rate of reaction is, of course, sulphur dioxide, which being a gas, tends to escape from the system especially at temperatures above boiling water. Pressure on the system is required to retain the gas, the greater the pressure the higher the concentration of gas that can be retained. The equilibrium of the system SO_2—CaO—water at various pressures and temperatures has received careful study.

In the several excellent papers on this subject attention has been focused on the strength of the initial acid, the time of cooking, properties of resulting pulps, and in some cases the pressure of the cook, especially at higher than usual pressure. Little study was made on the change of acid concentration in the digester during the cook, which in final analysis is the basic consideration of the subject. Obviously a given pressure can retain only a certain amount of SO_2 at cooking temperature. Using a pressure greater than necessary to retain the chemical placed in the digester is wasted effort. Using an acid stronger than can be retained by the pressure allowed in the digester means a loss in the value of the acid concentration.

There has been a trend over a period of years toward taking advantage of the principles of chemical concentration through the use of stronger acid. Impetus to this trend has of course been given by improved equipment such as pressure towers and accumulators. It seems timely, then, that some exploration of the limiting possibilities of the use of acid concentration be made.

Scope

The work described in this paper is limited to the regions of present commercial practice and only slightly beyond them, and a specific example of an instance of commercial application is given.

It is probable that, with few exceptions, present digesters are limited to 100 pounds working pressure or less, and that on the outside an efficient acid plant with a pressure tower could maintain an acid of 7.5 to 8.0% total SO_2. Knowing these limits, a logical question is: Can an acid of 8.0% total SO_2 take full advantage of a digester pressure of 100 pounds, or vice versa?

To increase digester working pressure by a large amount, or to prepare an acid much stronger than 7.5% total SO_2 would require a rather extensive change in equipment. A second question arises: What benefits could be obtained by increasing working pressure a reasonable amount, and how strong an acid could then be used?

To obtain some information on these questions, series of cooks were made in two ranges, one at maximum digester pressures of 95 pounds with acid strengths in the range of 6.0 to 8.75% total SO_2 and the second at maximum pressures of 110 pounds with acid strengths in the range of 8.0 to 11.5% total SO_2. In all cases maximum temperature was constant at 135° C. and combined SO_2 was constant at 1.25%. The same temperature curve was used throughout, a uniform rise to maximum in 4.5 hours, and this maximum maintained for the balance of the cook. Pressure rose to maximum as temperature was being raised, and then was relieved until temperature reached maximum. There was then no further relief until the blow-down which started 1.25 hours before the end of the cook. Total time for all cooks at 95 pounds pressure was 8.5 hours, for all 110 pound cooks 7.75 hours.

Equipment

All cooks were made in a stainless digester having a pulp capacity of 30 pounds, and cooked with an indirect heating, forced circulation system. Cooking conditions, that is temperature and maximum pressure, were controlled by instruments. Pulp was screened on a four-plate flat screen using 0.00*-inch cut plates. Standard TAPPI equipment was used for physical tests. Freeness was determined with a Canadian standard instrument.

Cooking Procedure and Testing

Sufficient commercial chips of Western hemlock were taken at one time for an entire series, and stored in closed containers. Acid was made up in a stainless steel accumulator using a commercial Jenssen tower acid and relief from the previous cook. Strength was adjusted with liquid SO_2. The digester was entirely filled with chips, and acid was pumped in to completely fill and build up a hydrostatic head of 10 pounds. Cooking was carried on as previously described. Pressure was relieved during the last 1.25 hours to 30 pounds, and the charge blown into a blow pit.

Tests on the cooking acid were made by the Palmrose method. During the progress of the cook acid samples were removed through an efficient condenser, and tested by the Haug method. Samples were taken when maximum temperature was reached and relief stopped, at the middle of the period of maximum temperature, at the start of the blow down, and just prior to the blow. In all 110 pound cooks an additional sample was taken when maximum pressure was reached and relief started.

Bleachability of pulps were determined by TAPPI Standard T 214 m-42, and are reported as per cent chlorine. Strength was developed in a Valley beater according to TAPPI Standard T 200 m-43, and handsheets were made and tested according to TAPPI Standard T 205 m-40.

Results

● Tests of acid strengths during the progress of the 95 pound cooks are given in Table I-A and are graphed in Fig. 1. It might be expected that, when relief stopped due to attainment of maximum pressure, a constant acid concentration would be obtained for a given temperature and pressure regardless of initial concentration. This was not the case. Only 4.18% SO_2 remained of an acid starting with 6.06%; whereas 5.00 and 5.10% remained from the two stronger acids starting at 7.58 and 8.78% respectively. This seems best explained by the possibility that the smaller amount of relief available in the first case was not sufficient to sweep out all the air held in the chips and released during the penetration period.

The difference between 4.18 and 5.10% then represented the partial pressure of nitrogen remaining in the digester. The close agreement of the latter two cooks suggested that the true equilibrium of SO_2 over water had been reached. So far as amount of SO_2 remaining in the digester at equilibrium was concerned, it appeared that an acid with 7.5 to 8.0% total SO_2 of which 1.25% was combined was the strongest that could be used with 95 pounds pressure and a temperature of 135° C.

After temperature reached maximum there was no further relief until the blow down, and decrease in chemical in that period was due to combination with the lignin. Since all cooks dropped to a constant value, 3.4 to 3.5%, more chemical was consumed in the cooks starting with stronger acid. Bleach demand, to be

This paper, given at the TAPPI meeting at the Hotel Commodore, New York City, on March 15, 1944, is a report on tests of cooks on Western Hemlock made in a stainless steel digester at Camas. It shows important savings in cooking time. The commercial value of these findings, are therefore of great importance.

Dr. Holzer is chief research chemist of the experimental pulping division of Crown Zellerbach's central technical department. His paper was given at the very well attended acid pulping session.

Following is an abstract of Dr. Holzer's paper:

"The benefits of more rapid cooking or any of its variations realized by use of high strength acid in the sulphite digester are well known, but the fact that the pressure capability of the digester is the limiting factor of these returns has not been emphasized. For a given pressure and temperature there is an optimum strength of acid. Above this strength the benefits are lost in relief. Below this strength the chemical cannot take full advantage of the pressure possibilities. At a pressure of 95 pounds and a temperature of 135 degrees C. the optimum strength is in the range of 6.25% free SO_2 (7.5% total SO_2). Raising the pressure to 110 pounds, raises this optimum to about 7.75% free SO_2 (9.0% total SO_2). With acids of 10% free and over there appear to be further benefits from penetration. Both from the experimental work and observation, it appears that at 135 to 140 degrees C. a shortening of the cook by 15 minutes can be realized by increasing pressure 5 pounds, provided that the acid strength is adequate to take advantage of the pressure."

discussed later, decreased in regular order of increasing chemical consumption, which confirmed a more thorough lignin removal with increased chemical usage.

The blow tests were on the high side, but this is a mechanical matter and a number of things could be done to improve chemical recovery.

In the series using 110 pounds pressure (Table II-B, Fig. 2) the same general trends were noted, and due to the higher strength acids new points appeared. The first acid test was taken when maximum presure was reached and relief started. Difference in acid test between the start of the cook and start of relief was due to penetration of the chemical into the wood, and to dilution of the acid of the wood moisture. Since the wood moisture was the same in all cases, the dilution factor would be nearly constant. Differences in acid test should therefore reflect the amount of chemical absorbed by the wood in each case. The decrease in acid tests were 1.97, 2.31 and 3.16% for the respective initial acids of 8.07, 9.95, and 11.60%. There was little difference in the first two, but a marked increase in the case of the strongest acid.

At the end of the relief a small difference was found in the equilibrium acid concentrations, the weakest acid having 5.48% SO_2 left, and the two stronger ones 5.80 and 5.88% respectively. Here even the weakest acid had a large volume of relief and very nearly swept all the air out of the digester.

At the start of the blow down all cooks had again come to a common concentration in the range of 4.43 to 4.56%. The amount of chemical absorbed from the liquor during the cooking period was approximately constant, but when the amount absorbed during the penetration period was added, the total amounts used were in direct proportion to the initial concentration and in inverse proportion to the bleach demands of the pulps. In these stronger acids the differences in amount of chemical left in the digester at equilibrium diminished, but the differences in amount absorbed in penetration was large.

Rate of Cooking

Since cooks at a given pressure were duplicates except for acid concentration, the difference in bleach demands of the pulps was a measure of the difference in rates of cooking. In the 95 pound cooks, the bleach demands (Table II-A) were in uniform inverse proportion to the concentrations of the acid left in the digester when maximum temperature was reached. In ascending strengths of initial acids the bleach demands were: 11.2, 8.8 and 8.0%, and the respective equilibrium acids will be recalled as 4.18, 5.00, and 5.10%. As already pointed out more sulphur was consumed from the stronger acids during the cooking period, and lignin removal was proportionately greater.

The rate of cooking did not show the same leveling off in the 110 pound cooks (Table II-B). As already pointed out the difference in sulphur usage among these cooks was due to difference in absorption by the wood in the penetration period, although there was a small difference, in addition, of the equilibrium acid strengths between the two weaker acids. The almost uniform drop in bleach demands from 8.5 to 7.7 to 6.5% was again but a reflection of the increased chemical usage in proportion to increased initial acid strength.

It was interesting to compare the bleachability of the 8.07% acid cook of the 110 pound series with the 7.58 and the 8.78% acid cooks of the 95 pound series. The respective bleach demands were 8.5, 8.8, and 8.0%, in almost strictly inverse proportion to the initial acid strengths. However, the 110 pound cook had a total time 45 minutes shorter than the 95 pound cooks. This interlocking of the two series showed that the increase of 15 pounds pressure, when there was sufficient chemical in the digester, saved 45 minutes cooking time.

Pulp Yield and Screenings

In neither series did the screened pulp yield change. In one there was a variation of only 0.3%, in the other 0.5%, both within the limit of accuracy of the procedure. The yield remained constant in each series in spite of the fact that the bleach demand dropped 3% in one and 2% in the other. This behavior suggests that in the range of bleach demand covered here the attack on the carbohydrates was dominated by the time and temperature of the cook, and to a lesser extent by the degree to which the pulp was cooked.

Each series was made with a separate sample of wood, and the yields of the two were not strictly comparable with each other. With this reservation it may be pointed out that in the 110 pound series, cooked at the same temperature as the 95 pound series but 45 minutes less time, the yield averaged nearly 1% higher although the pulps are definitely softer. In any event cooking to produce a softer pulp with high chemical con-

TABLE I.—ACID CONCENTRATIONS IN THE DIGESTER DURING THE COOK

A. Pressure 95 Pounds

	Total	Combined	Total	Combined	Total	Combined
Initial	6.06	1.23	7.58	1.24	8.78	1.27
At 4.5 hours (max. temp.)	4.18	0.70	5.00	0.74	5.10	0.64
At 6.0 hours	3.68	0.40	3.92	0.34	4.00	0.38
At 7.25 hours (start blow down)	3.40	0.31	3.54	0.28	3.40	0.28
At 8.5 hours (blow test)	0.86	0.18	1.02	0.18	0.70	0.16

B. Pressure 110 Pounds

Initial	8.07	1.24	9.95	1.26	11.60	1.24
Start of relief	6.10	0.70	7.64	0.86	8.44	0.78
At 4.5 hours (max. temp.)	5.48	0.60	5.80	0.58	5.88	0.54
At 5.5 hours	4.80	0.36	5.06	0.38	4.75	0.35
At 6.5 hours (start blow down)	4.44	0.28	4.43	0.31	4.56	0.24
At 7.75 hours (blow test)	1.34	0.21	1.25	0.23	0.98	0.16

TABLE II.—COOKING CONDITIONS AND PULP CHARACTERISTICS

A. Pressure 95 Pounds

Maximum temperature, °C.	135	135	135
Maximum pressure, lbs.	95	95	95
Total time, hours	8.5	8.5	8.5
Initial acid total SO_2, %	6.06	7.58	8.78
free SO_2, %	4.84	6.34	7.51
combined SO_2, %	1.23	1.24	1.27
Bleach demand, % Cl_2	11.2	8.8	8.0
Screened pulp yield, %	46.5	46.8	46.5
Screenings, %	1.8	1.3	1.5

B. Pressure 110 Pounds

Maximum temperature, °C.	135	135	135
Maximum pressure, lbs.	110	110	110
Total time, hours	7.75	7.75	7.75
Initial acid total SO_2, %	8.07	9.95	11.60
free SO_2, %	6.83	8.69	10.34
combined SO_2, %	1.24	1.26	1.24
Bleach demand, % Cl_2	8.5	7.7	6.5
Screened pulp yield, %	47.5	47.2	47.7
Screenings, %	0.6	0.75	0.6

TABLE III.—PULP STRENGTH TESTS

A. Pressure 95 Pounds

Cook	6.06% SO_2	7.58% SO_2	8.78% SO_2
Bursting strength, %			
Initial	63	60	58
At 400 ml. freeness	156	163	159
At maximum	164	165	167
Tearing resistance			
Initial	2.26	2.50	2.62
At 400 ml. freeness	1.32	1.11	1.02
At maximum burst	1.19	1.09	1.00

B. Pressure 110 Pounds

Cook	8.07% SO_2	9.95% SO_2	11.60% SO_2
Bursting strength, %			
Initial	75	72	75
At 400 ml. freeness	160	158	159
At maximum	162	160	164
Tearing resistance			
Initial	2.26	2.36	2.20
At 400 ml. freeness	1.09	1.26	1.16
At maximum burst	1.04	1.18	1.06

centration has had less harmful effect on yield than the same change in pulp hardness would have had if produced by an increase of temperature.

The percentage screenings was calculated on the basis of screened pulp as is general mill practice. In the 95 pound series the amounts were normal and showed no trend. In the 110 pound series the amounts are low possibly due to better penetration by the stronger acid.

Pulp Strength

In general it may be said that the pulp strengths of both series were normal for the conditions and for this species. The only unusual point was the uniformity throughout each series despite the drop in bleach demand. Here, again, is evidence of the milder action of cooking by chemical concentration than by heat.

Commercial Experience

There has been more than one confirmation of the above work on full mill scale operation. A typical example was as follows: It was necessary to shut down one digester for major repairs, but the normal production was badly needed. Cooking was speeded up to compensate for the loss of one digester. Most of the shells being fairly old it seemed preferable to obtain this increase in rate with temperature rather than pressure. On two newer ones, however, an increase in cooking pressure from 80 to 90 pounds was allowed.

Data for these two digesters were analyzed separately for a month, and included 147 cooks. The first week was normal operation and constituted the control period. The following three were the periods of the test. As in all commercial operation there were seemingly inevitable variations, and it was necesstary to set up a series of corrections. Total time saved was calculated as follows:

1. Any decrease in total time was taken directly and called positive.
2. From mill experience a change of 1% in chlorine bleach demand involves 25 minutes time. A decrease in bleach demand was taken as positive.
3. Any decrease in time to maximum temperature meant an increase in cooking at maximum temperature and was taken directly as a negative correction.
4. Any increase in maximum temperature shortened cooking time and was taken as a negative correction. From experimental work it was established that an increase of maximum temperature in the range of operating conditions decreased cooking time 2 minutes per degree Fahrenheit.
5. The algebraic sum of the above corrections was taken as the time saved by increase of digester pressure.

The mass of data was too great to include here. The time in minutes saved per cook for the various periods were:

Period	1	2	3	4
A	0	31	34	32
B	0	37	33	20

The uniformity of the savings added weight to the validity of the corrections. Digester A averaged a 32-minute per cook saving over a 3 weeks' period. Digester B averaged a 30-minute saving, or an overall average of 31 minutes. The 45-minute saving from a 15-pound increase in pressure obtained from experimental work is in excellent agreement with the commercial findings.

It should be added that there was no appreciable change in pulp quality during the period described.

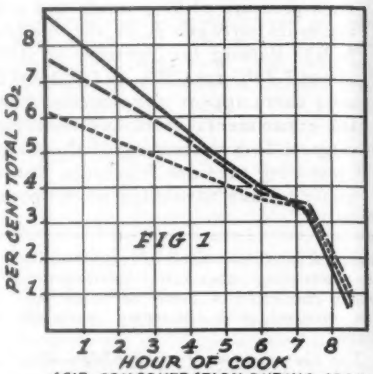
Conclusions

Pulping of wood is a chemical reaction subject to the basic laws of chemistry. From the Law of Mass Action it is known that the rate of a chemical reaction is proportional to the concentration of the reactants. Increase of the sulphur dioxide concentration in a digester at cooking temperature by using an initial acid sufficiently strong, and by increasing digester pressures, will increase the rate of the pulping reaction. Forcing the reatcion with chemical appears to have far less effect on the product than temperature. Benefits of such procedure are, however, limited to the concentration that can be held by the pressure capabilities of the digester.

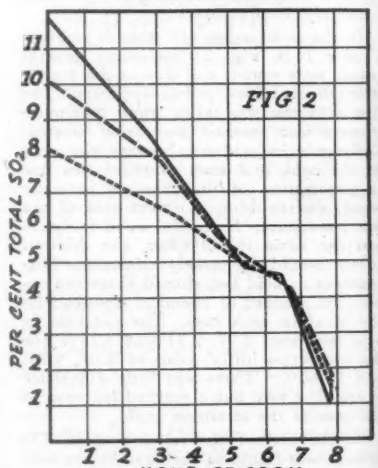
With the working pressures of digester shells limited to 100 pounds or less, the strength of acid which can be used effiicently appears to be limited, for 95 pounds pressure and 135° C. maximum temperature, to about 6.5% free SO_2. For higher pressures higher free SO_2 contents are feasible. When the free approaches 10% the benefits of penetration appear to increase more rapidly than at lower concentrations.

In the final analysis, increased digester pressure accompanied by acid of strength adequate to take advantage of the pressure gives the operator greatly inrceased flexibility of operation of his mill.

1. Production may be increased with no increase in temperature.
2. Production may be maintained with a decrease in temperature.
3. Softer pulp may be produced at the same temperature and production rate.
4. Any of the above may be combined in any desired proportions.



ACID CONCENTRATION DURING COOK
PRESSURE 95 LBS.



ACID CONCENTRATION DURING COOK
PRESSURE 110 LBS

Baum Is Superintendent Of Pacific Paperboard

● Among newcomers from the east to the ranks of the western pulp and paper industry is John Baum, lately announced as superintendent of the Pacific Paperboard Company, Longview, Wash., by James E. Flood, president. Mr. Baum came to the coast three months ago as consulting engineer, at the request of Mr. Flood, to direct installation of the No. 3 machine at this plant, and to supervise other technical alterations and installations. He was asked to remain as superintendent.

Mr. Baum was for nine years superintendent of a mill of the United Paperboard Company near New York City. Prior to this, he served as mill superintendent with the Kickliefer Container Corporation at White Pidgeon, Mich., for more than ten years. Formerly Mr. Baum resided in Goshen, Ind.

The Cellulose Family of Plastics

By RALPH H. BALL
Assistant Techincal Director
The Plastics Division, Celanese Corp. of America

IN dealing with the development of new plastic applications for war production, we have found a serious need for reliable information on the behavior of plastics. Part of this is due to the great number of new people who have had to deal with plastics and their properties for the first time—people who believe erroneously that they can use plastic physical property tables in the same way as tables of metal alloy properties—people who pore over charts and graphs and plastics comparators without the background of experience to interpret them—in short, people who need help.

It seemed to us that we could render a service at this time by discussing, in a simple and practical way, the properties of the cellulosic family plastics in relation to each other and to other types of plastics.

The ramifications of the plastic industry have become so broad and complex that it is impossible to consider even a limited section of the industry, such as the cellulosic plastics, without circumscribing the scope of the discussion. The word "Plastics" today is used very loosely to cover both elastomers and rigid plastics, and may even refer to surface coatings, insulation binders, etc. In the cellulosic family we are dealing only with rigid plastics, since none of the cellulose derivatives so far developed make satisfactory elastomers. Therefore, in evaluating the properties of the cellulosics among themselves, and their position competitively among other types of plastics it is logical and necessary to limit ourselves to a discussion of rigid plastics.

RALPH H. BALL, Assistant Technical Director, Celanese Corporation of America, Plastics Division (290 Ferry St.), Newark, N. J., is the author of the article on this page, published in full for the first time by this magazine. He recently served as chief of the Thermoplastic Unit of the Chemical Section of the War Production Board in Washington, D. C.

From the viewpoint of both compounding and use there is quite a sharp line of demarcation between rigid plastics and elastomers. In terms of physical properties we might define rigid plastics as those which require substantial force to deform them, and which show only a moderate deformation under the stress of usage. This would probably mean an elongation in tension of less than 100% and possession of an appreciably flexural strength. This is the type of plastic which the molder or fabricator must consider in deciding whether to use a cellulosic or some other plastic for his product, and it is, therefore, within this field that we will review the position and the properties of the cellulosic plastics.

Position of the Cellulosic Group

Production figures published on plastics usually lump together all their uses. They include not only the quantities used for plastic parts, but also such uses as surface coatings, impregnating compounds, binders for grinding wheels and brake blocks, plywood adhesives, insulation varnishes, etc. For this reason, the importance of the cellulosic family in the rigid plastic field is not generally appreciated. If these production figures are adjusted to cover only the field in which cellulosic plastics compete, namely, rigid plastics, we get an entirely different picture of the place occupied by the cellu losics.

The figures used to illustrate this point are based on the writer's personal estimate, made after checking available statistics. For the year 1943 the production of cellulosic plastics was estimated at 75 to 80 million pounds. For the same period the production of all other rigid thermoplastics was estimated to total 40 to 45 million pounds The cellulosics, therefore, account for between 60 to 65% of the volume of rigid thermoplastics. If we extend this pitcure to include thermosetting plastics, the total of all rigid plastics in 1943 was estimated at between 255 and 280 million pounds. The cellulosic plastics comprise approximately 30% of this total, being exceeded in volume only by the phenolics. Among the thermoplastics, therefore, the cellulosics are the largest by a wide margin, and they constitute an impressive percentage of the total rigid plastic production.

In proceeding to consider the properties of plastics, either within the cellulosic family, or between it and other types of plastics, general comparisons are not adequate. This is one of the major defects of plastics comparators, or tables of physical properties. For example, they do not show the reasons why cellulose acetate butyrate makes an excellent tube but has indifferent properties in the form of sheets, or why cellulose acetate propionate makes good film but has no particular value as a molding material. To make our comparison technically sound, we must go beyond the general properties of the plastics as they may appear in a table of physical properties, and consider factors not yet adequately described by precise test data. There are a number of ways in which the subject can be broken down to accomplish this purpose. One of the most practical, because it has some relation to use, is to consider separately each of the forms in which rigid plastics are supplied to the molder or fabricator, namely: sheets, rods and tubes, film, foil, and molding material.

Molding Material

Molding material present a more complex picture than any of the other forms because of the variety of plastic products available. In the cellulosic field we have cellulose acetate, cellulose acetate butyrate and ethyl cellulose, each in a large series of compounds of varying properties. In the thermoplastic resin family we are dealing with methyl methacrylate, polystyrene, vinyl copolymer and vinylidene chloride. In the thermosetting resin group there are phenol formaldehyde, urea formaldehyde and melamine formaldehyde. Because of the breadth of this field, only the major points of similarity and difference will be dealt with in the discussion which follows. It can be truly said that the cellulosics are the backbone of the injection and extrusion molding industry in this country. The technical reasons which account for this enviable position are summarized in the following paragraphs.

In the first place, the cellulosics are the toughest of all plastics. This permits the molding of parts with sections much thinner than can be tolerated in other types of plastics. It is because of their toughness that cellulosic parts will stand a great deal of abuse without failure. In comparing the toughness of cellulosics with other plastics we are handicapped by the lack of a good measuring stick. Neither tensile nor impact tests provide adequate figures for estimating the toughness of a plastic. It is a property which depends to some extent on the

ability of the material to elongate and flex without permanent deformation, but other factors are aslo involved, and the problem of a test method has not been solved. Since we are without figures for expressing toughness, comparisons between the different materials will have to depend on practical experience based on use. Vinyl copolymer probably comes nearest to equalling the cellulosics in toughness. Vinylidene chloride is in the same range as vinyl copolymer at normal temperature, but its brittleness at reduced temperatures must be kept in mind in its toughness rating. Methyl methacrylate is still lower down the toughness scale, and polystyrene and the thermosetting moldings are at the bottom.

A second factor responsible for the wide use of cellulosic molding compounds is the great variety of formulations available. Special requirements in physical properties, special problems in mold design, and peculiar machine conditions can usually be met by proper selection of compound. This simplifies the problem of adapting the molding compound to the job and results in a molding operation that runs smoothly and rapidly. None of the resinous plastics offer such a variety of compounds. A comparatively wide selection is available in the phenolics, but most of the other resins are produced only in two or three variations. This frequently leads to difficulties in designing the job for plastics, since the plastic cannot be changed to adapt it to the job.

A third factor in the popularity of cellulosic molded parts is the range of colors available. Clear and colored transparents, mottles, translucents, pastels and opaque colors are all available in a complete range. Only two of the resinous plastics, methyl methacrylate and polystyrene, have a better basic clarity and freedom from color than the cellulose derivatives. This permits more delicately colored transparents, translucents, and pastels in these two plastics. However, none of the resinous plastics can be produced with the range of color effects available in cellulosic moldings. This is a particularly serious handicap in the case of phenolic moldings, where the color range is limited and dull. Color has always been, and will probably continue to be, a very important factor in the use of plastics.

It should always be remembered that none of our present plastics are perfect. In selecting a material for a part, both the strong points and limitations must be examined in the light of the requirements for the job. Cellulosic plastics, like all others, have their limitations.

The most important limitation to consider is the fact that the cellulosics are thermoplastics. This is, of course, also an important advantage, since by virtue of it they can be injection and extrusion molded, and, thus, compete in cost per part with lower priced compounds which must be compression molded. However, their thermoplasticity means that cellulosic molded parts cannot be used at temperatures above their softening point. The same limitation, of course, applies to the resinous thermoplastics. Maximum temperatures permissible for the use of cellulosic molded parts vary in general from 150 to 215 deg. F., and follow the flow temperature of the molding compound rather closely. The same limits in general hold for the resinous thermoplastics, with the exception of vinylidene chloride, which has somewhat better heat resistance than the average cellulosic compound, and vinyl copolymer, which has lower heat resistance than most cellulosic compound, and vinyl copolymer, which has lower heat resistance than most cellulosics. Where high temperature resistance is required thermosetting plastics must be used, the phenol formaldehyde plastics being outstanding in this respect, with melamine formaldehyde a good second.

A second limitation which must be kept in mind in using cellulosic moldings is susceptibility to moisture. Although this varies in degree among the three cellulosic molding materials, as will be pointed out later, it is a characteristic of all of them. This manifests itself in two ways. In the softer flowing compounds it results in warpage of the molded part under humid conditions. In all cellulosic compounds it results in some change in the dimensions of the part with variations in humidity. Warpage can usually be overcome by proper selection of compound, and can also be minimized by care in the design of the part. Modern molding equipment can handle the harder flowing compounds with ease, and the use of such compounds will usually overcome warpage. Expansion and contraction with humidity change in cellulosic parts is normally small enough to present no obstacle in the majority of uses. It can usually be accommodated by making proper allowance in the design of the part. Where this cannot be done the only recourse is to use one of the resinous plastics. All of them, with the exception of urea formadehyde, are superior to the cellulosics in moisture sensitivity.

A third weakness in cellulosic plastics is lack of resistance to inorganic acids and alkalies. Of the cellulosic molding materials, ethyl cellulose is much more resistant than cellulose acetate or acetate butyrate. None of them compare with the resinous plastics in this respect. It should be pointed out, however, that all of the cellulosics are satisfactorily resistant to the milder organic acids, such as fruit, food, and body acids.

An additional point which merits discussion, and which frequently is of more importance than resistance to acids and alkalies, is resistance to solvents. Although it is impossible to generalize on such a subject, some rough comparisons may be of value. Of the cellulosic plastics, cellulose acetate is the most solvent resistant. It is not attached by aliphatic hydrocarbons such as oils and gasoline, and its resistance to aromatics and chlorinated hydrocarbons varies from good to fair, depending on the solubility of the plasticizer. Attach by chlorinated hydrocarbons and aromatics increases as we proceed through cellulose acetate propionate and cellulose acetate butyrate to ethyl cellulose. The latter has a broad range of solubility, but is still not attacked by straight chain hydrocarbons. Among the resinous plastics, the thermosets are unaffected by most solvents, being superior to all other plastics in this respect. Vinylidene chloride and vinyl copolymer are generally more resistant to solvents than the cellulose esters. Methyl methacrylate is somewhat similar to the cellulose esters. while polystyrene is more widely soluble and resembles ethyl cellulose in this respect.

While the comparisons made above between the cellulosics and the resins are valid for the cellulosic molding materials as a group, there are, nevertheless, individual differences in properties within the group which will influence the selection of compound for a particular job. A discussion of these differences may very well follow the listing of advantages and limitations used above.

With respect to toughness, ethyl cellulose is outstanding among the cellulosic molding materials. This holds at normal temperatures, and is particularly evident at reduced temperatures. Cellulose acetate and acetate butyrate are pretty much equal in toughness if proper adjustment is made in flow temperature. In general, the flow temperature of a cellulose acet-

STILL NEED FOR IMPROVEMENT IN WOOD PULP FOR PLASTICS

Celanese Corp. of America is today the largest producer of cellulosic plastics. All of its products are on high priorities or under allocation because of their important applications, among them gas masks for the chemical war fare department, glazing for airplanes, packaging for ordnance use, and coils, rods and insulating material for the electrical and electronic industries .

Regarding the increasing use of wood pulp in making cellulose plastics, Dr. Ball says:

"Even before the war, some wood pulp was being used in cellulosic plastics, although the principal raw material was cotton linters. Since the war the conversion to wood pulp has been accelerated, due to the shortness in the supply of linters, and to improvement in the quality of pulp. There is still need for further improvement in wood pulp before it can be used in plastics interchangeably with linters. The major defects of cellulose ester plastics made from pulp are inferior color and clarity. Their use has, therefore, been limited to films and foils and to darker pigmented colors. Even with these limitations the consumption of wood pulp has been substantial. If this color and clarity difficulty can be overcome, the cellulosic plastics will provide a large scale market for pulp."

ate butyrate compound must be two to three steps softer than cellulose acetate to have the same toughness. For example, to equal the toughness of an H flow cellulose acetate, an MS cellulose acetate butyrate would need to be used. While this permits of lower molding temperatures, it will usually result in a lower heat distortion point for the cellulosic acetate butyrate molding.

With regard to the variety of formulations which may be provided, all three of these cellulosics may be considered equal. Ethyl cellulose, being the newest, is not yet available in as complete a series of compounds as the other two, but it is capable of an even wider range or formulations.

On the subject of colors, there are some differences between these three cellulosics which may be noted. All are capable of the same types of color variation. However, cellulose acetate has the best basic color and clarity, and can, therefore, be converted into more delicate and brilliant colors. Cellulose acetate butyrate is a close second in this respect. Ethyl cellulose, because it is new, has the poorest color and clarity of the three, by a considerable margin. Nevertheles, we already have assurance from developments now in progress, that the color and clarity of ethyl cellulose will be greatly improved, and have every expectation that before long its color will be as good as the other cellulose derivatives.

Cellulse acetate and acetate butyrate are approximately equal in the maximum service temperatures which they will withstand. It is too soon yet to say that ethyl cellulose will excell them in this respect, but it can be said that, in a compound of equal flow, ethyl cellulose will stand a higher temperature without distortion.

There are also differences between these three cellulosics in moisture sensitivity. It is important to note that these differences cannot be predicted from water absorption data, especially where humidtiy warpage is involved. It is not the amount of water absorbed that matters, but the effect of this water on the molded part.

The comparison in warpage between cellulose acetate and acetate butyrate in the harder flow ranges has approximately the same relation to flow as indicated in discussion toughness. To give the same resistance to warpage, a cellulose acetate molding compound must be two or three steps harder in flow than the corresponding cellulose acetate butyrate. For example, an H_3 flow in acetate will equal an H flow in butyrate, or an H_5 will equal an H_3. Below MH flow in cellulose acetate, or MS flow in cellulose acetate butyrate, neither product has good resistance to humidity warpage. In this respect ethyl cellulose moldings are superior to both these cellulose esters by a considerable margin. For example, ethyl cellulose parts in MS flow have successfully withstood wet heat exposures of 100% humidity at 175 deg. F., which will distort either H_3 acetate butyrate or H_5 cellulose acetate.

The other manifestation of moisture sensitivity, namely, humidity expansion, also shows difference between these three cellulosics. The smallest dimensional change is found with ethyl cellulose, with cellulose acetate butyrate a close second. Cellulose acetate parts have considerably more expansion and contraction with humidity change. If these factors are appreciated by the designer of the plastic part, they can usually be allowed for, and are no obstacle to the use of any of these plastics for most applications.

In acid and alkali resistance cellulose acetate and acetate butyrate are similar. Neither have satisfactory resistance to alkalies or mineral acids, although cellulose acetate butyrate will stand considerably longer exposure than cellulose acetate. Both will perform satisfactorily in contact with organic acids such as fruit acids. Ethyl cellulose, on the other hand, is a substantial improvement in this respect. Its alkali resistance is good, and it has better acid resistance than is generally credited to it.

There are many other properties of lesser importance which might be brought out in comparing these three cellulosic molding materials among themselves, and with the resinous molding compounds. However, the above are believed t be the principal factors which should be considered in selec ng the proper type of plastic for a molding job.

Sheets

In turning to the consideration of sheets, it is found that the general physical property requirements differ sufficiently from those of molding materials to call for a different selection of plastics. Because sheet uses demand thinner sections than moldings, freedom from brittleness is of great importance, and stiffness becomes a major factor. The high thermal decomposition point necessitated by the molding process is also reduced. For these reasons we find the selection of palstics materials for sheets confined to cellulose nitrate, cellulose acetate, cellulose acetate propionate, vinyl copolymer, methyl methacrylate and phenolic.

For years cellulose nitrate was the outstanding sheet material, and it is still a very important one. It provides a combination of stiffness and freedom from brittleness which no plastic material, cellulosic or otherwise, has ever equaled. Its ability to remain flat with age, its resistance to moisture and acids, and the ease with which it can be fabricated, are all strong points in its favor as a sheet material. Its limitations are well known, namely: iflammability, low heat distortion point, and discoloration on outdoor exposure. The way in which celleulose nitrate sheet production has been maintained, in spite of these serious limitations, is the best evidence of the value of its outstanding properties.

The sheet which combines the strong points of cellulose nitrate without its disadvantages is cellulose acteate. Burning rate and heat distortion point of cellulose acetate sheets are entirely satisfactory for most uses, and their light stability is excellent. Toughness and freedom from brittleness are outstanding properties, although cellulose acetate does not quite equal celleulose nitrate in its optimum combination of stiffness with freedom from brittleness. Cellulose acetate sheets have greater expansion and contraction with humidity change than cellulose nitrate, and this must be allowed for in mounting sheets of large area, such as those used in aircraft glazing. Except for greater sensitivity to humidity, and slightly less stiffness or snap, cellulose acetate sheets duplicate the major advantages of cellulose nitrate, without the disadvantage of the latter.

Cellulose acetate propionate sheets have been produced in small quantities, and represent a compromise in properties between cellulose acetate and cellulose nitrate. They are equal to the former in stability to light and heat, and in non-inflammability. They are equal to the latter in lack of moisture sensitivity. This has been accomplished, however, at the expense of stiffness, where cellulose acetate propionate sheets are not quite the equal of cellulose acetate. Cellulose acetate butyrate is still lower on the stiffness scale, to the point where it is not attractive as a general sheet material.

Ethyl cellulose sheet stock made by the block pressing method is not yet a commercial item. There is every indication, however, that there will be a demand for it, and that it will be produced. The outstanding properties expected in it are: toughness, especially at low temperatures, and lack of humidity

VAN T. BURLEIGH, who prior to his enlistment in November, 1942, was Oregon district manager for the Pacific Paperboard Company of Longview, Wash., now rates with Uncle Sam's Navy as a storekeeper, second class. He is stationed at Farragut, Idaho, in the supply department.

sensitivity over a wide temperature range.

One point which should be emphasized in connection with the above review is the relation between processing method and colorability. Of all plastics, the cellulosics are the only ones which have been found amenable to the block pressing and slicing method of manufacture. This method permits infinitely greater color variation than any other processing technique. The great variety of exact configurations, the duplication of marbles and precious stones which have made cellulose acetates and cellulose nitrate sheet products synonymous with beauty in color, can be produced only by the block pressing method. This advantage, possessed only by the cellulosic family, should not be underestimated.

In the resinous plastic group there are two thermoplastics available in sheet form, namely, methyl methacrylate and vinyl copolymer. In their properties they differ widely from one another and from the cellulosic plastics. They are both stiffer than any cellulosic sheet. They are also both more brittle than any cellulosic sheet, a limitation which is especially true of methyl methacrylate. Moreover, because of the methods used in their manufacture, their colorability is practically limited to plain colors.

Methyl methacrulate, because of brittleness, cannot be produced or handled economically in gauges below 40 mils, and serious breakage results even with 60 mil sheets. In heavier gauges, however, methyl methacrylate sheet has several virtues which offset this weakness, and account for its use on a large scale, especially in aircraft glazing. Its major advantages are color, clarity, moisture resistance, and good weathering characteristics. Its heat distortion point is quite good for a thermoplastic. Its abrasion resistance is fair, being poorer than that of cellulosic sheets. A decision regarding its use would be determined largely by balancing the color, clarity and weather resistance required against the brittleness which could be tolerated in the particular application.

Vinyl copolymer sheets, although substantially more brittle than cellulosics, are less brittle than methacrylate, and are still tough enough for a good many uses. Their combination of stiffness with reasonable freedom from brittleness is one of their principal assets. Execellent water and chemical resistance are also strong points of vinyl copolymer sheets. Their major weaknesses are low heat distortion point and discoloration on exposure to ultra violet light.

In addition to these thermoplastic sheets, there is one important thermoset sheet, namely, laminated phenolic. This sheet can be made only in black and brown opaque, and is much more brittle than any cellulosic sheet. It cannot be heat formed and fabricated by the easy means adaptable to thermoplastics. Nevertheless, it has widespread and important use, especially in industrial equipment, because of its form stability, its resistance to moisture and chemicals, and its ability to withstand high temperatures.

Rods and Tubes

In considering rods and tubes in the same way as we have sheets, the first point to note is that we have a wider selection of resinous palstics and a different selection of cellulosics.

In the cellulosic rods and tubes, there is production in cellulose nitrate, acetate, and acetate butyrate, and in ethyl cellulose. No cellulose acetate propionate rods are being made, their place having been taken by cellulose acetate butyrate. The lack of stiffness of cellulose acetate butyrate is not as important a fatcor in rods and tubes as in sheets, because the heavier cross-sections provide more rigidity.

With the above exception, the same basic points of comparison discussed under sheets hold for rods and tubes. For combined toughness and rigidity cellulose nitrate has no equal. Its hold on the tool handle business is a good example of this. Next to cellulose nitrate in combining toughness with stiffness is cellulose acetate. Cellulose acetate butyrate is less stiff than cellulose acetate, but is less affected by variation in humidity. For freedom from brittleness at low temperature, ethyl cellulose is again outstanding.

There are three general processes for the production of cellulosic rod and tube, which affect the color combinations which can be attained. The block pressing method, similar to that used for sheets, permits great variety and exact configuration of color. Only cellulose nitrate and cellulose acetate rods and tubes are now made by this method. The "stuffing" process produces solid colors and random mottles. Here again only cellulose nitrate and cellulose acetate are made by this process. The dry extrusion process gives solid colors. Cellulose acetate, cellulose acetate butyrate and ethyl cellulose rods and tubes are made by dry extrusion. Therefore, if color is a factor, these processing variations must be kept in mind in selecting rod and tube material.

Resinous plastic rods and tubes may be obtained in methyl methacrylate, polystyrene, vinyl copolymer, vinylidene chloride and phenolic. Of these the phenolics are made by laminating, and the others by extrusion. In dealing with sheets, a comparison has already been made between the cellulosic plastics and methyl methacrylate, vinyl copolymer and phenolics. The same comparisons hold for rods and tubes, with the added comment that most of the vinyl copolymer and considerable of the vinylidene chloride tubing has been of the plasticized or flexible type, and could properly be called an elastomer.

Neither polystyeren nor vinylidene chloride were covered in the discussion on sheets. Both appear to be specialty mataeriab when it comes to rods and tubes. Polystyrene rod has been produced in small quantity, principally for special uses in the electrical field. Among the rigid plastics it is outstanding in its low power factor at high frequency. It also has high clarity and good color, and excellent resistance to water, acids and alkalies. Its principal limitation is brittleness. The chemical and water resistance of vinylidene chloride tubing has led to its use as industrial pipe, where its color limitations and brittleness at low temperatures are not serious handicaps. The necessity for using special alloys in extruding it has also retarded its general application.

Film

The cellulosic plastics have the field of film practically to themselves. All of the cellulosics are produced in the film form. If we exclude elastomers, the only resinous plastic made as a film is a special polystyrene development. The major reason for the lack of film competition from the resinous plastics is that satisfactory film can be made only from the toughest plastic.

In this field again cellulose nitrate has maintained an outstanding position in spite of the handicaps of inflammability and discoloration under ultra violet light. Most motion picture fiilm is still cellulose nitrate because nothing else can equal its projection life. However, to eliminate the hazard of storage and handling, X-ray and graphic arts film, and most aero and similar military film, has been converted to cellulose acetate, acetate propionate and acetate butyrate. Where accurate measurements are required, as in topographic film, cellulose acetate propionate and acetate butyrate are preferred to cellulose acetate, since their dimensions change less with humidity.

In photo film the relative stiffness of the film base is not too important, since the gelatin coatings add a great deal to the stiffness. In non-photo applications, however, rigidity of the film is essential, and here cellulose acetate is the outstanding non-inflammable film, showing that the same stiffness relationships hold among the cellulose esters for both sheet and film.

The position of ethyl cellulose film in this picture is not yet fully established. It excels all other film materials in freedom from brittleness at reduced temperature. It is also readily formed by heat and has good moisture resistance. There is, therefore, every reason to believe that it will find important uses as a film.

Foil

Foils may be defined generally as films with a thickness of less than 3 mils. Since their greatest volume of use has been as a packaging material rather than as a plastic, only a brief review need be made here.

With the exception of Saran and Polystyrene, the resinous foils are all elastomers. Saran foil is very recent, and is creating interest because it is an excellent moisture vapor barrier. Polystyrene foil is being produced in small quantity for special electrical use.

In the cellulosic field, the major production has been in cellulosic acetate, with cellulose acetate butyrate also being made in some quantity. Both are approximately equal as a moisture vapor barrier, and both are satisfactory, and vastly superior to regenerated cellulose foil, in maintaining dimensions with age and humidity change. Cellulose acetate butyrate

has a greater elongation in tension than cellulose acetate, which is an advantage for some uses, and a disadvantage for others.

Ethyl cellulose foil has been made in small quantity. As a moisture vapor barrier it falls in the same range as cellulose acetate and cellulose acetate butyrate. It is somewhat better in holding dimensions with age and humidity change. Its most interesting property, however, is its toughness, where it excels both the cellulose esters by a substantial margin. This should lead to important usefulness in the packaging field.

Before concluding this discussion, it may be well to point out that in making the comparisons and drawing the conclusions at least as much weight has been given to practical experience and performance in the field as to physical test data. This has been done for two reasons. In the first place, we must admit that the interpretation of physical data has fallen away behind practical information on the utilization of plastics. A great deal of fundamental study on the physics and engineering of plastics remains to be done before theory catches up to practice. In the second place, when you consider all the various plastic forms, and the different problems and requirements of each, the picture grows so complex that it is impossible to condense the information into any concise set fo charts or tables which will properly summarize even the data presented in this paper. When it is considered that this data is in itself only a review, and leaves much detail untouched, the complexity of the problem becomes apparent.

From the comparisons drawn in this discussion, we have seen that the cellulosic plastics occupy a large and important place in the field of rigid plastics. Their two chief limitations of temperature and humidity sensitivity are more than offset by their advantages. Their position of importance is merited by their toughness, by the variety of formulations in which they are supplied, by the ease with which they can be manufactured into finished articles, and by the range of color effects which can be produced. These are all points in which the cellulosic palstics excel all other types of rigid plastics.

The chemical theories relating these properties to the molecular architecture of the plastic are not yet fully understood. Perhaps the best explanation of the oustanding qualities of the cellulosic plastics is that their backbone was built by nature. Chemists have never been able to synthesize the cellulose chain, nor to put together other chain molecules which equal it in toughness and versatility. Mother Nature still has much to contribute to the chemistry of plastics.

Spokane Paper Mill's Situation Improves

● Acocrding to Manager Chester A. Buckland of the Inland Empire Paper Company at Spokane (Millwood), Wash., March receipts of salvage paper reached approximately 600 tons. The mill capacity for this material is 650 tons.

"We have not yet cut into the stock pile accumulated during the intensive drive of January," Mr. Buckland said. "But it is a mighty comfortable feeling to know that when shipments drop off we will not again face the danger of a shutdown in production for the Army and Navy. We will continue to pay OPA prices until April 15."

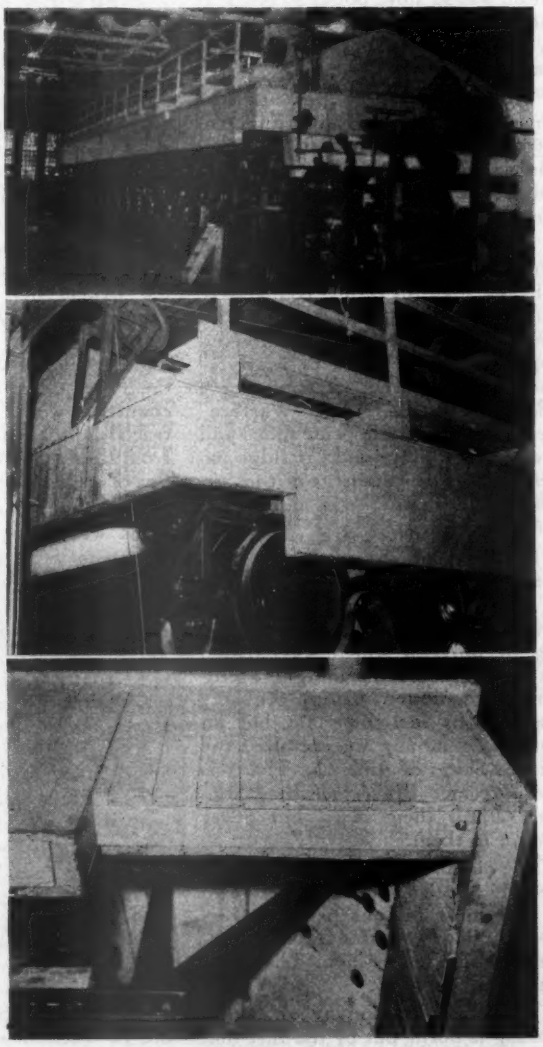
Corrugated paper, made from salvage in combination with fresh pulp, is only one of the products of Inland Empire Paper Company. Others include newsprint, groundwood specialties, bonds, wrappings and coarse papers. The mill functions in the three processes: Groundwood, with 16 grinders; sulphite, with two rare installations, a three-tube acid tower and a multiple digester. A wood splitter and a draw barker prepare the groundwood.

Woods utilized are white fir, Englemann spruce, and Western hemlock, which are trucked reasonable distances or are shipped by rail from various points in Idaho.

A. W. Witherspoon is president of the Spokane company, L. A. Stilson, vice president, and W. W. Witherspoon, secretary. J. L. Janecek is mill superintendent and Myron Black and J. H. Butler, Jr., are assistant managers.

Spokane Mill Equipped For Coal

Because of unexpected tightness locally in hoged fuel supplies, the Inland Empire Paper Company, Spokane (Millwood), Wash., has equipped one of its boilers with a Combustion Engineering Company stoker for coal burning. C. A. Buckland, general manager, feels the mill will be assured of steam in the future, no matter what developments in the fuel situation may bring. The inability of Spokane saw mills to operate to capacity has caused the shortage.



VIEWS OF A WOLMANIZED HOOD installed over a paper machine at the Columbia River Paper Mills, Vancouver, Wash., makers of bleached and unbleached sulphite and groundwood papers. This hood is made of lumber which is pressure-processed by Wauna Lumber Co., Wauna, Ore., for use under humid conditions and protected against decay, termites, etc.

(Top view) — General view of the hood.

(Middle) — A closer view of the hood on the wet end of the machine. By report, such hoods are easy to build, with the plant engineer drawing his own design to suit any particular purpose.

(Lower view) — Looking up from the corner of the machine at the finish end at the hood construction. Note use of regular bolts and washers without stain from humid temperatures.

After pre-fabrication, the ordered lumber moves to the treating plants — the American Lumber and Treating Company which maintains its only Northwest treating plant on the premises of the Wauna Lumber Company. The two organizations are entirely separate except in the matter of cooperation. The Wauna Lumber Company sells the finished product, including processing by the American Treating Company, at a price which includes all services.

The History and Romance of Paper

By F. R. SIEVERS*
Groundwood Foreman,
Camas, Wash. Division, Crown Zellerbach Corp.

PART II

Including Comments on West Coast History

● The first mill built in America was in 1690. This mill was built by William Rittenhouse a native of Amsterdam, Holland. His mill was at Roxborough, Philadelphia.

In this era when paper was made chiefly of rags or cotton and linen fibres, the immigrant was a man to welcome. In these days communication was so slow, books so few that the immigrant was one of the means by which industry and knowledge traveled.

The paper industry grew until the time of our revolt against England. At that time we had between sixty and seventy paper mills and a very valiant part they played in the running of that war.

The paper makers of Pennsylvania were required to stay on their jobs so that the army could have cartridge paper. In fact, paper did become so scarce that unbound copies of Fox's "Book of Martyrs" and some hundreds of copies of a "Sermon on Defensive Warfare" were taken from the print shops and used for waddings and cartridge paper. It almost reminds us of the current song, "Praise the Lord and Pass the Ammunition."

Paper, then, as today, was used for printing money. With no power of taxation, Congress, held then at Philadelphia, sanctioned the printing of bills on which was written Exitus in Dubio, meaning the outcome is in doubt. Today probably many of us feel the same, but on our paper money we see this, the United States of America. That was the outcome. Brave men may honestly admit their fears, but never give in to them.

The manufacture of paper pushed steadily ahead in the Colonies. Two of our most famous paper makers of early date were the Gilpin Brothers, Thomas and Joshua. Their mill started about 1767.

What people thought of papermaking is borne out by the fact that some of the records we have of this mill are recorded in a book called "The Casket of Flowers, Literature, Wit, and Sentiment." It told how clean the mill was, "not a cobweb marred these white walls, nor dust allowed to soil the floors."

They made the first machine in America to make a sheet of paper mechanically. The paper on this machine was formed on a cylinder covered with wire cloth revolving in a vat of pulp and water. They invented a system of running water through steel rolls to smooth it. Formerly, it had been smoothed by rubbing it by flint or other smooth substances.

First Use of Wood Pulp

● The next great land mark in paper making was the use of wood pulp. Up to this time, paper made from rags gave many things to help advance the world. But the basic supply of raw material, rags, was meager compared to the task that paper could perform.

Early studies of the use of wood were made by one Antone Ferchault de Reaumer as early as 1719. Quoting from his speech before the French Royal Academy he said, "The American wasps form very fine paper like ours. They extract the fibres of common wood of the countries where they live. They teach us that paper can be made from the fibres of plants without the use of rags or linen."

However, though paper from wood was thought of in the early seventeenth century, the world was so busy fighting wars that little was done about it.

We have records of books where various samples of wood pulp were used for title pages, etc. With the exception of the use of straw for paper making, little was done about it until the invention in 1854 of a wood grinding machine by a man named Keller in Germany. The pulp made was called ground wood and is so called today.

Ground wood was used for mixing with other pulps of linen and cotton fibres. Paper of this kind could be produced more rapidly, printed faster and better than ever before. This process was introduced into the United States in 1866 when the production was about ½ ton a day. The production of ground wood in the United States in 1940 was 1,750,000 tons and nearly as great an amount was purchased from Canada.

The first paper containing ground wood pulps could not be sold. Printers were slow to take up anything new. Finally in desperation, paper with wood pulp in it was substituted for an order to a printer who thought he was getting all rag pulp. The printer used it unknowingly. Then when he again ordered, they sent him paper from an all rag pulp. The printer was incensed and demanded that he get paper as good as in his previous order. Thus, was a market established for this grade of paper made from wood pulp. The purchaser of the paper who got fooled was none other than the editor of the Boston Herald, a paper still published today.

Sulphite Paper In 1866

● In 1852 the chemist invaded the field of paper making, producing a pulp cooked with sodium hydroxide. But it, like the ground wood, made a weak sheet and was used mostly for mixing with other pulps. This pulp called soda pulp made then of birch and poplar wood only, was so very high in cost that its use was limited.

Wood pulp never really came in to its own until Tilgham introduced the sulphite process in 1866.

Tilghman worked in the United States mint, helping print paper money. He was trying to invent a water mark to be made with acid on dry paper to be used with bank notes. At home he left his work bench littered with pine sawdust and shavings. His wife brushed off the bench and sawdust fell into a stone crock full of sulphurous acid. What he said to his wife or she said back, I do not know. However, to reclaim the acid he strained it through a copper screen and laid that down without cleaning it off. Picking up the wire screen, he discovered had a film of pulp on it. He found that part of the wood had dissolved leaving the fibrous part intact. This was the first inkling of the sulphite system. I never could see why his wife did not get part of the credit. However, it is not my purpose to tell you of processes and of final achievements reached in these processes, but to tell you something of the history of paper and its importance

and effect on the growth of our civilization.

If you would look in history, you would find that all of the great nations at the end of the nineteenth century were the ones who had made the most of the use and manufacture of paper.

Genius is where you find it. No special clique of noblemen, religious heads, and such have a corner on new ideas. Therefore, if there were not books and schools and libraries, none of which could exist in quantity without paper, there would be little progress.

The more free and numerous are these schools, the greater the advancement. When you stop to think of it there is hardly a thing we use today but what the drawing or formula was first worked out on paper. The books used by the engineers, doctors, and scientists to obtain the knowledge to do this work was taken from books which were past experiences of other men in these same fields over many years. Here we have the proof of the fact of the greatness of the use of paper, for with it we can bring to our aid all the knowledge and experience of the men in any field of work who have preceded us. Think of the records of Pasteur in his work on the prevention of infection. Built on the written records he left, our medical men have saved thousands of lives and prevented untold miseries. Van Loon, in his History of the Arts, speaks of Russia under the Czars as a "dead end street of art. Only four or five per cent of the people could read or write. In this field of ignorance was the most fertile place in the world for revolution and strife."

The use of paper with its kindred art of printing is without doubt the greatest power in the world today. Bombers fly over enemy cities dropping not always bombs, but sometimes paper leaflets from the sky which may have as big a part in the war as the armies have.

Pacific Coast History

● In this long history of the development of this industry your company and the paper mills on this Pacific slope have rounded out many steps in the later pages of the history of paper making.

The history of paper making on the west coast of the United States began with a small mill making paper from rags and straw at Taylorville, Marion County, California. This mill was a very small undertaking and there is very little information about it available.

Another mill at a spot about two miles from Oregon City, Ore., was built in 1866. This mill was built by a man called Lewthwaite, an immigrant from the Isle of Man, England. The Lewthwaites had been paper makers for many generations. The son of the builder of this mill, A. J. Lewthwaite, was once managing vice president of the Crown Willamette mills. He and several members of the family did much to build up this group of paper mills. The mill his father built produced about 1,500 lbs. of straw and jute papers in twenty-four hours. I remember this old mill site very well. I grew up on the opposite bank of the Clackamas River from it. As a boy I fisher for minnows with a bent pin in the old mills tail race. The mill was then in ruins. The old water wheel was still there. It was made of cast iron and had a square hole in it for the main shaft. This shaft had been made of hickory wood. It insure a supply of water wheel shafts, the builder planted hickory trees which grew to enormous size. When I was a kid, our present personnel director (Vic Gault) and myself used to miss school once in a while to gather nuts from these trees which are still standing today. But the mill site has become nothing but a gravel bank.

Our own mill, Camas, was the next mill on which we have any record. It was built in 1884 but soon burned down. It was rebuilt in 1886 at which time a wood grinder was installed, the first on the Pacific Coast. Practically every thing in the mill was driven with water power. Small water wheels were everywhere. Even 40 years ago, you could count the electric motors in the mill on the fingers of one hand. Now there are hundreds.

FIRST LIEUTENANT JAMES EWART, who was Assistant Advertising Manager, Pioneer Division, The Flintkote Company, Los Angeles, some time ago, took an intensive six-weeks' course at the Army Air Force's Technical Training Command. Information as to his present whereabouts is not available.

When They Locked Doors

● The West Linn mill, then known as the Willamette Pulp & Paper Co. (at West Linn, Ore.), was built in 1889. Here the first sulphite mill was built west of the Rocky Mountains. The sulphite process at that time was still considered a secret. The sulphite department was always locked even to the employees of the other departments. I never saw the lock, but N. R. Lang, who was resident manager when I first worked in that mill, had the key hanging in his office. I have seen it many times, a large brass key about twelve inches long weighing about two pounds. It was a hand made key.

All these mills used either part straw, jute or rags for their pulp material.

The first all wood pulp mill was built at Stockton, California. This mill (Fibreboard Products Inc.) now makes practically all board today.

The mills of our organization are well managed and with far reaching foresight as to the future; have stood depressions and hard times such as I hope we never see again. They began planting trees to insure a future supply of pulp wood before the Government even thought of conservation.

In 1892 at West Linn, a paper machine 144" wide running at 480 ft. was the fastest and widest machine in the world.

Again in 1919 a machine 204" wide and running at 735 ft. located at Ocean Falls, B. C. (Pacific Mills, Ltd.), which is a part of our organization, had the greatest speed and width of any machine in the world.

Here in a land of abundant forest with a climate and soil suitable to the reproduction of trees, can there be a doubt that the Pacific Coast including British Columbia and Alaska, will not be the greatest pulp and paper producing country of all times?

We know not what the morrow will bring. The future seems shrouded in obscurity. But, in spite of wars, some day history will know of the seeds of knowledge which your company is trying to plant with you here. Their vision is in the future. Their help to you is to carry on ever at a higher plane, the manufacture of this sinew of our natiotnal life—paper.

Trade Talk

of Those Who Sell Paper in the Western States

Men's Club to Invite Speakers to Meetings

● A tentative plan to invite featured speakers to future meetings was decided upon at the March 28 monthly dinner meeting of the Paper Mill Men's Club of Southern California.

Twenty-eight members were present at the University Club, Los Angeles, to discuss the results of a questionnaire sent out by President Dwight Tudor and his committee, to determine the future course of the club.

The questionnaire had been prepared by a committee headed by Marvin Vanderheiden. It asked the members to state their preference for the kind of meetings they would like in future; whether these should be held as luncheons or dinners; at downtown locations, country clubs; should be featured by speakers, entertainment or just plain get-togethers.

As a majority of the membership had indicated a desire to hear speakers, it was decided, on a motion by Mr. Philbrook that one be secured for the April meeting as a trial balloon to see if this would not increase the attendance at the meetings.

Mr. Vanderheiden received the club's thanks for the fine way in which he conducted the questionnaire and in leading the discussions.

Several amendments to the club's by-laws were placed before the membership and passed. These included the new ruling that the club, at its option, may terminate any membership where the person leaves the area, or changes his occupation. Another dealt with firm memberships. Under the new ruling, a firm membership may be terminated if the firm in question does not contribute as a sponsor during the calendar year.

The April meeting will see the end of President Tudor's regime and the election of new officers to serve during the coming year. Present at the meeting were:

J. Dwight Tudor, Fibreboard Products Inc.; Vice President **Ansel A. Ernst,** Everett Pulp & Paper Co.; Secretary **Gerry A. Theim,** Milwaukee Lace Paper Co.; Treasurer **J. W. Genuit,** Fernstrom Paper Mills, Inc., Pomona; **A. E. Carlson, M. C. Larsen,** Pioneer Flintkote Co.; **G. M. Madigan, Russell F. Attridge, Albert C. Hentschel,** Johnson, Carvell & Murphy; **Marvin A. Vanderheiden,** Nekoosa-Edwards Paper Co.; **Verner Moore, George F. Skleba,** Dixie Cup Co.; **B. Bahnsen, Shearman Gue,** California Cotton Mills; **William M. Daly, Roland Wolf,** California Cotton Mills; **J. M. Scholl Lewis,** Paper Container Mfg. Co.; **John Berutti,** Schermerhorn Bros. Co.; **Ben W. Johnson,** Waupoca, Wis., guest of Cliff Pierson, **John H. Davis** Co.; **Lester E. Remmers,** Crown Willamette Paper Co.; **F. R. Schroeder,** Sealright Pacific, Ltd.; **Floyd D. Smith,** Paterson Parchment Paper Co.; **Neil B. Sinclair,** Sinclair-Lang Co.; **Horace E. Gilson,** Capital Envelope Co.; **Elmer C. Thomas,** A. U. Morse & Co., and **Frank R. Philbrook,** Graham Paper Co.

Twenty-five years of service with the Commercial Paper Corporation, San Francisco, brought its reward last month to ARTHUR L. GOTTFRIED (right), when he was made sales manager of the company. Mr. Gottfried was the first employee of the company's president and founder, Marcus Alter.

Beveridge Retires

● After 50 years in the paper business, L. L. Beveridge, salesman for Blake, Moffitt & Towne's Seattle division announced his retirement on March 17.

Mr. Beveridge began his career in 1894 as bookkeeper for a middle west paper company. Later he served as office and credit manager. In 1910 in response to the urge to go West he moved to Seattle and continued on in the paper business, later joining the staff of Blake-Moffitt & Towne.

He has been with the company for the past twenty-six years and upon his retirement will settle down on a beautiful estate he has built up on Steel Lake just south of Seattle.

Lt. Edgar Colton Weds

● Wedding bells rang out merrily for Second Lt. Edgar L. Colton on March 3, when in San Francisco he took Miss Eleanor Barbara Zimet for a bride. Lt. Colton, now stationed at Fort Jackson, South Carolina, is in the medical administration division of the Army. He is the youngest son of L. A. Colton, vice president of the Zellerbach Paper Company, San Francisco, and was formerly employed by the Oakland division of the paper concern.

William Brazeau Dies

William A. Brazeau, secretary and sales manager of the Inland Empire Paper Company, Spokane, Wash., until his retirement in 1936, died February 3 in Seattle. Born in Wisconsin Rapids, Wis., in 1872, he formerly was in paper business there. His wife, a son and stepson survive, as well as two brothers and a sister in Wisconsin Rapids.

Wife of Phil Howard, Publisher, Dies

● Mrs. Marjorie N. Howard, wife of Phil Howard, president of Howard Publishing Co., 111 West Washington St., Chicago, publisher of the Paper Merchant and the Paper Converter, was fatally injured in an automobile-train collision March 2. She had driven her husband to his suburban train and was returning to their lakeshore home when her car was hit by a train at a Long Beach, Ind., crossing.

Every year at Paper Week in New York, Mr. Howard publishes a daily newspaper reporting APPA and TAPPI proceedings. He and Mrs. Howard were both at the Waldorf in New York for Paper Week during late February. His many friends in the industry extend their sympathy and regret for his loss.

Daughter Born to Wm. Daly's

Mr. and Mrs. William Daly, Los Angeles, became the parents of a baby daughter on December 24th. The little lady has been named, Janet Kay, and has an older brother Michael.

Mr. Daly is manager of Silklin Paper Corporation, Los Angeles, suceeding W. H. Charbonneau who resigned last September to go into business in Portland, Oregon.

Both Mr. and Mrs. Daly formerly resided in Camas, Washington, and both were employed by Crown Zellerbach Corporation in Camas.

Richardson Promoted

Forrest B. Richardson, former Zellerbach Paper Co. representative on Grays Harbor, Wash., and member of the Aberdeen, Wash., city council, was recently promoted from second to first lieutenant in the army quartermasters corps. He is stationed near New York City.

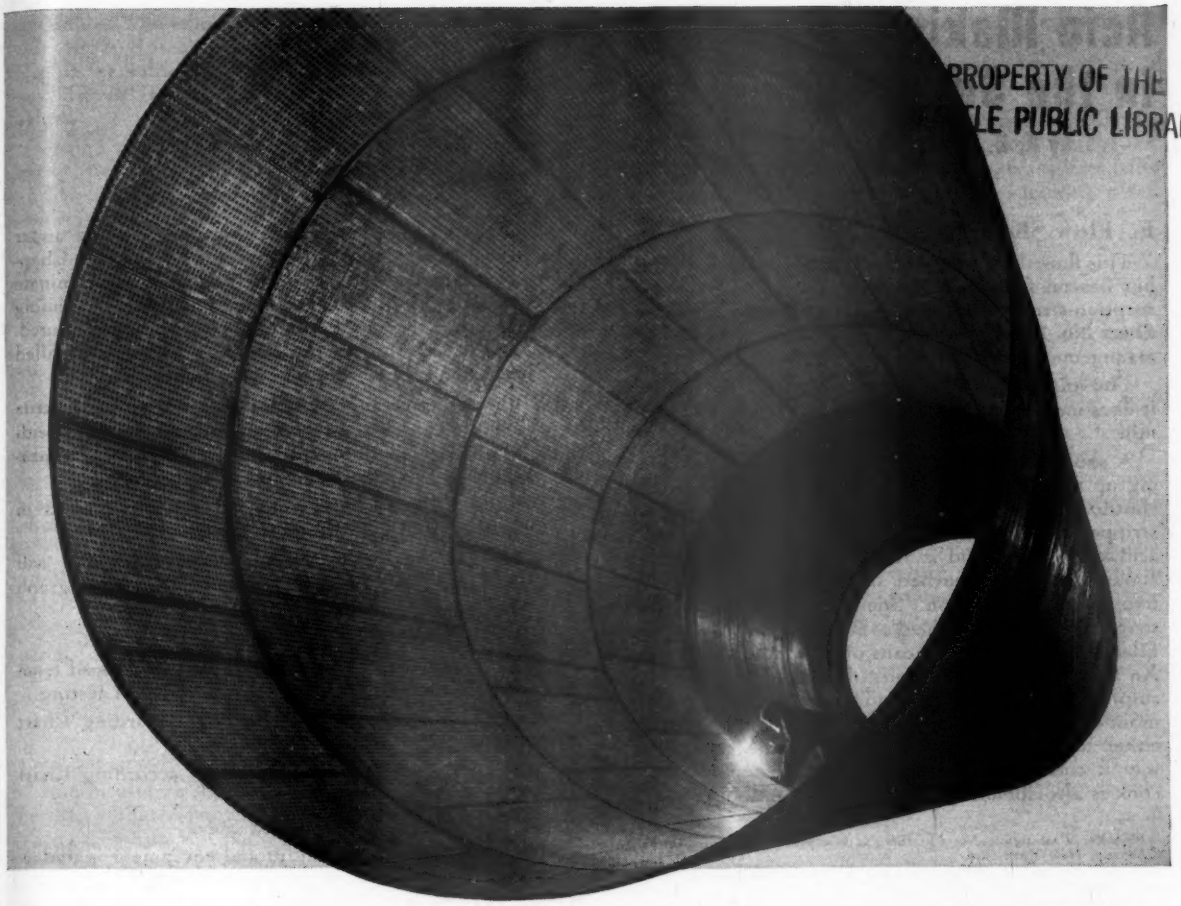
McMillin Back to Work

D. C. McMillin, headquarters stationery department, Zellerbach Paper Company, San Francisco, is back on the job after a month's illness.

Notes On Industry Men

William "Bill" Garrity, Munising Paper Co., Chicago, was a recent San Francisco visitor.

Bruce Garrison, formerly manager of the Kansas City division of the Zellerbach Paper Company, is now wrapping paper sales manager in the San Francisco division of the company.


PROPERTY OF THE
LE PUBLIC LIBRARY

What Makes a Lined Vessel Last Longer?

Despite the fact that we have built more alloy lined pressure vessels than anyone else in the country...we don't have the answer to every corrosion problem at our fingertips. We know that there is no predicting the action of all corrosive materials under all conditions of temperature and pressure. We know also that the ability of many alloys to resist corrosion is changed by the process of fabricating and heat treating.

Therefore, before we build a lined pressure vessel we either give our customer the benefit of experience gained in meeting the same requirements; or with precedent lacking, give him the results of adequate pre-testing made under conditions simulating those of actual fabrication and operation.

Thus, the buyer is able to choose the lining material best suited for his needs. *That* is one of the reasons why Smithway lined vessels last longer.

BUY MORE WAR BONDS

ELECTRIC-WELDED PRESSURE VESSELS

A. O. SMITH Corporation

MILWAUKEE 1 • WISCONSIN

Offices at: NEW YORK • PITTSBURGH • CHICAGO • TULSA • HOUSTON • LOS ANGELES • SEATTLE • In Canada: JOHN INGLIS CO., LIMITED

Acid Making In the Sulphite Pulp Industry

by A. H. LUNDBERG*

CHAPTER II -- Continued

F. Flow Sheet No. 10

This flow sheet has been arranged for pyrites burning, but has no features not previously discussed. The absorption-stripping system was discussed under **Flow Sheet No. 7** and the high and low pressure accumulator arrangement under **Flow Sheet No. 9.**

The advantages with this arrangement are many and it does meet any requirements called for in any sulphite mill.

A subject not discussed before is the matter of starting up a new installation, or a start up after a lengthy shutdown. Without a pressure tower, or an absorption-stripper installation, it is necessary to start up on raw acid as no other acid is available. The desired strength cooking acid was reached slowly after weeks and perhaps months operation. Sometimes acid cooks, that is stripping of the raw acid's SO_2 content in a digester filled with raw acid by means of steaming, are necessary. An acid cook is by no means ideal as the calcium mono-sulphite does not split. Besides the loss of sulphur, the mono-sulphite containing liquid has to be disposed of, either to the blowpits or directly to the sewer. Either way it constitutes a nuisance. The benefit of an acid cook is also sometimes lost as with the deliberated SO_2 a considerable amount of vapor escapes, as noted under the stripping calculations (Paragraph IX Div. C—Chapter 11). Usually there is no arrangement to eliminate the condensed vapors before they enter the reclaiming tank and thus the acid becomes correspondingly diluted. By careful attention to the steaming of the acid filled digester, some result can, however, be obtained.

1. Without any arrangement for building up of the true free SO_2 content, the cooking must be started with an acid corresponding to **Charts XXI-XXIV** (ParagraphVII, Division B, Chapter 11).
2. With a pressure tower the acid will correspond to **Charts XVI-XX** (Paragraph X, Chapter 1).
3. With an absorption-stripper system the acid will correspond to **Charts XXVIII-XXXI** (Paragraph VII, Division C, Chapter 11).

All cases are assumed without any acid cooks.

Thus a raw acid 25° C—77° F. can be produced from an 11% burner gas according to **Chart XXII** testing.

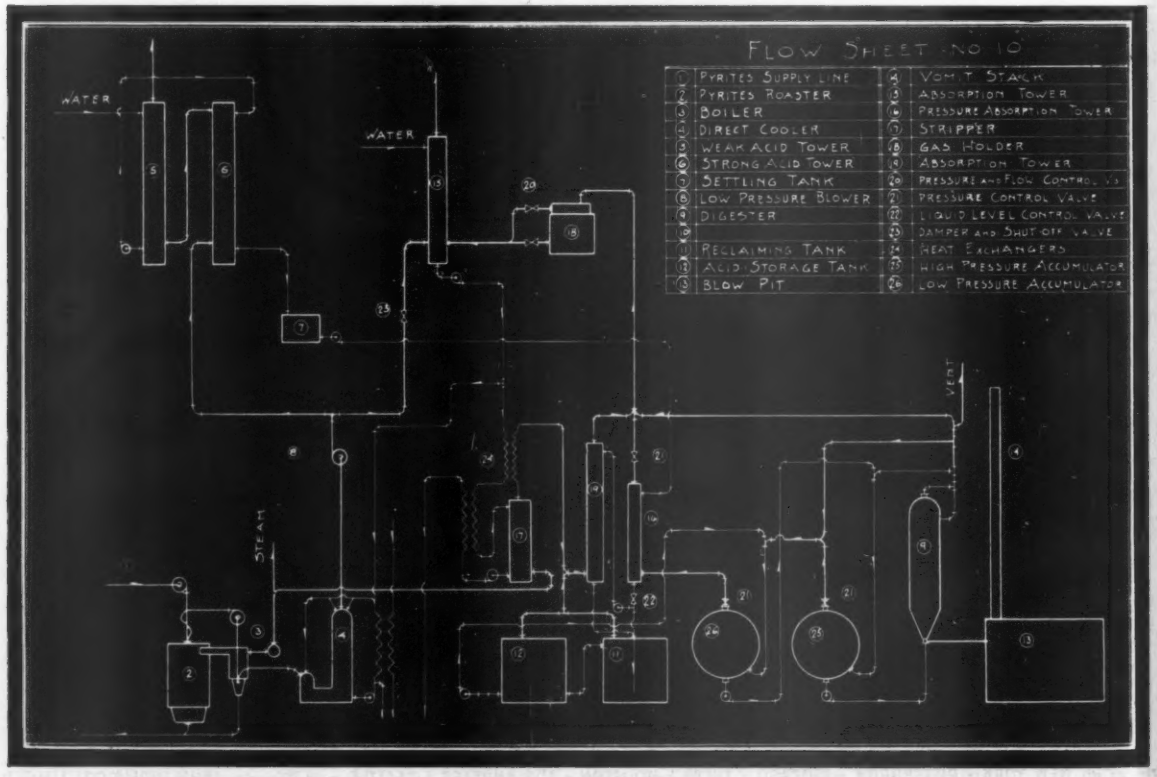
3.80% Total—1.65% Combined SO_2 according **Chart XVII-D.**

5.25% Total—1.65% Combined SO_2 according **Chart** XXVIII (90% stripped gas).

9.40% Total—1.65% Combined SO_2.

Thus the value of the additional equipment is under-

*Seattle, Washington. Mr. Lundberg is Western Manager, G. D. Jenssen Company, New York City.



standable. The efficiency of the installed equipment decides how closely above figures can be approached. Except for values on **Charts XXI-XXIV,** that can vary in different installations, other charts give theoretical values.

Using earlier assumed figures that 19200 lbs. of cooking acid is required per ton of pulp and that 484 lbs. of SO_2 is discharged with the pulp and lost, the reabsorbed SO_2 in the reclaiming system amount; with the 3.80% Total acid, to $19200 \times 0.038 - 484$ or 245 lbs. SO_2 and with the 5.25% acid to

$19200 \times 0.0525 - 484$ or 524 lbs. SO_2

and with the 9.40% acid to

$19200 \times 0.094 - 485$ or 1320 lbs. SO2

all per ton of pulp.

X. Summary

1. Acid making is simply a matter of absorption of the Sulphur Dioxide Gas in water forming a sulphurous acid solution, which in turn combines with the base into a bisulphite solution with varying amounts of free sulphurous acid.

2. The solubility of Sulphur Dioxide in water and in a bisulphite solution is governed by the strength of the gas, temperature and pressure.

In water the solubility follows approximately the imperial formula

$$X = \frac{0.03 \times K \times P}{1.0363}$$

(See paragraph IX, Chapter I).

In a bisulphite solution, however, the solubility drops besides with temperature with incerasing base content. (See paragraph X, Chapter I).

3. Acid making in a pulp mill involves two separate operations.

A. Raw Acid making and
B. Recovery.

The raw acid is produced with a relatively weak SO_2 gas 11-18% produced from either Sulphur or Pyrites. The burner gas should be low in oxygen, sulphur triox ide, sublimed sulphur and other for acid making detrimental gases and solids.

In the recovery system the raw acid is fortified with SO_2, to produce the cooking acid, with strong gases 60-100% SO_2 (on dry basis) (See Paragraph VII, Chapter II).

4. Since the gas strength plays such an important role in production of strong cooking acids, the inert gases, especially in the digester relief, should be carefully watched and eliminated as far as possible. (See paragraph VIII, Chapter I.)

5. Water temperature of between 10° and 15° C. (50° F. and 60° F.) of the fresh water supply are most suitable for raw acid making, especially in lime stone towers.

6. As this temperature range is difficult to obtain in many localities, a special pressure tower or an absorption stripping system is recommended for control of the base content of the raw acid. (See paragraph IX, Chapter II.)

7. No mill should be without an absorption tower in connection with its recovery system.

8. More attention should be paid the recovery system. A poor recovery system can upset the best of raw acid systems.

9. Hot acid recovery has distinct advantages over cold acid recovery.

(To be continued in June issue)

Powell River Co. Gives Scholarship

● As a stimulus to research in wood chemistry, the University of British Columbia has accepted from Powell River Co. an annual $700 scholarship for post-graduate study in that field.

The idea of this scholarship was the outcome of special discussions of post-war problems between President Harold S. Foley and Control Superintendent Harry Andrews. These discussions envisioned complete utilization of timber resources, the use of new types of wood for pulp and paper manufacture, the consumption of timber from logged-off areas, the study of new production methods and new products.

Mr. Foley and Mr. Andrews agreed that here was a fertile field for research. The scholarship is open to honor graduates in chemical engineering.

Mill Girls Team Finishes High In League

● The Crown Willamette girls basketball team from the Crown Zellerbach mill at Camas, Wash., which did not rate much consideration during the first half of the split season of the Portland Women's League, finally finished with a second place tie.

Until it won play-off victory of a tie game, the team had only a fourth place standing. In 1942 and 1943 the mill team won top honors in the same league.

Olive Jacobsen, Crown Willamette forward, with a total of 107 points in 7 games, earned individual scoring honors for the second half of the season.

NEWS OF *The Pacific Pulp & Paper Industry--*

15 Years Ago

J. H. Bloedel, president of the Bloedel-Donovan Lumber Mills, said, "I am willing to predict that 20 years from now loggers and lumbermen of the Pacific Coast will be pulp and paper men—that is the trend by necessity."

A new corporation known as the Puget Sound Pulp & Timber Company was formed with Ossian Anderson as president and Homer W. Bunker as chairman of the board, and announced plans to build a $3,500,000 bleached sulphite mill at Everett, Wash. In the company is merged a 90-ton mill at Bellingham and 60-ton mill at Anacortes, Wash., which were headed by Mr. Anderson.

Northern Pacific and Union Pacific railroads on April 4 announced plans for a 60-mile extension north of Grays Harbor, arousing interest in an estimated 26 billion feet of pulpwood available in the Olympic Peninsula. Alex Polson, Grays Harbor lumberman, predicted "this is where future pulpwood is coming from, if it is handled rightly."

A $4,000,000 improvement program was begun at the Crown Willamette Paper Company's Camas, Wash., mill, adding about 200 employes to its payroll of over 1,000. Newsprint production will be discontinued and new facilities will increase production to better grade kraft and sulphite paper. A large bleach plant, a converting mill to make towels, a new fourdrinier machine and 12 new bag machines will be installed.

A. S. Hooper became paper mill superintendent at the Cascade Paper Co., Tacoma, Wash.

Death of John Kieran, president of Winchester Bay Lumber Co., halted plans to build a 60-ton bleached sulphite mill at Reedsport, Ore.

10 Years Ago

Carl E. Braun, mill manager of the Hawley Pulp & Paper Company, and A. H. Lundberg, Seattle chemical engineer, have designed and patented a new continuous pulp cooking system.

Oscar Jorgenson, secretary of British Columbia Pulp & Paper Co., is in Japan on a trip to size up the market.

Ralph Reid joined the Spaulding Pulp & Paper Co., Newberg, Ore., as chemist.

About 100 members attended the April 6-7 meeting in Seattle of the Pacific Section of TAPPI under chairmanship of Lawrence Killam.

WAR-TIME SERVICE MEETING

Silver Anniversary Convention

DISCUSSIONS:

Post-War Planning — Processing Problems
Labor Problems — Raw Materials
Equipment — Supplies
Group Meetings

May 24, 25, 26, 1944

Edgewater Beach Hotel -- Chicago, Illinois

Write Hotel for Reservations

On account of the size of the meeting the Hotel is taking no transient business on these dates. When writing state that you are attending the Superintendents' War-time Service Meeting.

THE AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, INC.

High Grade Paper Shortage In Canada

● A substantial shortage in the supply of white paper particularly book and writing grades, continues in Canada, despite the measures that have been taken by the government to curtail all non-essential uses and to ration essential uses.

The supply situation, in fact, is so acute that the mills have been unable to supply to Canadian publications the full tonnage that was alloted them by the Wartime Prices and Trade Board publishing administrator under the reduced paper quotas that went into effect this year.

The fine paper mills are now advising their customers of the critical supply situation, and enclosing an order from A. P. Jewett, Wartime Prices and Trade Board Administrator of Book and Writing Papers, requiring them to establish quotas for all customers and distribute production available for Canadian consumption pro rata on basis of 1943 shipments.

Exceptions to the latest restriction order are: Dominion government needs, school textbooks, certain case-bound books and magazines and periodicals. In such cases the same yardage of paper will be allotted as least year, providing all feasible steps have been taken to use lighter weight paper.

Leading national magazines already have introduced considerable savings in use of paper through adopting lighter weight stocks as against former weights of 42-lb. and 48-lb.

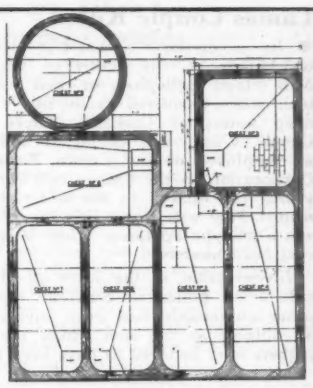
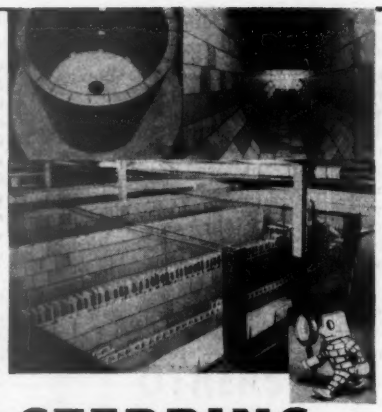
Chief factor in the present unbalance between supply and demand is the sharp increase, under government direction, of fine paper exports. Currently about 20% of Canadian production is being exported, or twice as great a proportion of total output as last year.

Canadian mills have been asked to provide for the white paper needs of certain Empire countries which have little or no facilities for such manufacture themselves. The countries and regions being supplied by Canada include New Zealand, Australia, Ceylon, Rhodesia, the Middle East Command and others. United States mills have assumed responsibility for meeting the paper requirements of Latin American and certain other areas. These allotments were made by the Combined Production and Resources Board at Washington.

Plastics Plant In Quebec To Use Wood Pulp

● A new five million dollar plastics plant using wood pulp materials is being built by the Canadian Celanese Ltd., at Drummondville, Quebec. Elaborate plans are under way for the development of the plastics industry which is expected to become one of the largest in the Dominion after the war. Maintained by the Canadian Paper and Pulp Association, the Forest Products Laboratories at Ottawa and the excellently equipped laboratory at McGill University have been doing extensive research work in this field. The big pulp companies with their cellulose resources are naturally very much interested in the promising future of this relatively new industry.

A plastic product capable of taking the place of metals in many uses has been developed by the Howard Smith Paper Mills Ltd., and among the innumerable articles to be made of plastics are boats, skis, and molded furniture.

CALL IN STEBBINS

for Stock Tanks and Chests that fit into rehabilitation and modernization programs

For sixty years, Stebbins have worked closely with pulp and paper mill operators, solving lining and tank problems peculiar to the industry.

Stebbins designers are thoroughly familiar with the chemical and mechanical requirements of the various processes involved.

All materials of construction are made by others to meet STEBBINS specifications based on sixty years of experience and hundreds of successful installations.

Stebbins erectors sent to do the actual installation know their way about a pulp or paper mill, leaving your own men to carry on their jobs without constant interruption.

SEMCO

Stebbins Engineering Corporation

TEXTILE TOWER SEATTLE, WASHINGTON

Hawley Men On Leaves

Hawley Pulp and Paper Company, Oregon City, received a visit in early February from Don Hoyt, photographer first class, of the U. S. Navy. He was formerly in the sales promotion office. Most of Hoyt's service has been in the South Seas, but he returned to a station on the east coast.

James Alexander, back on thirty days leave after twenty-three months' duty in the South Pacific, recently visited the Hawley Pulp and Paper Company mill in Oregon City, where he was formerly employed in the purchasing office. He is a storekeeper, second class, U.S.N.R.

Union Contract Signed

● Following several months of negotiations, a joint union agreement has been signed by Powell River Co. with the Pulp, Sulphite Local No. 76, and Paper Makers Local 142.

Signing of the contract, union spokesmen said, terminates their efforts to obtain a "closed shop" clause. However, provision was made for an extra mill holiday on Easter Monday and an appended letter provides for payroll deductions of union dues at any time the union desires it.

Paper Mill to Rescue

Inland Empire Paper Company, Millwood, Wash., came to the rescue of Armour & Co.'s slaughterhouse at Spokane recently when its steam plant wasn't able to cope with a record amount of meat processing. A switch locomotive from the paper company was loaned to Armour & Co. and connected with its steam plant.

Newsprint Price Boost?

● Although an official of the Wartime Prices & Trade Board has stated that a further increase in newsprint prices may develop, to offset increased costs, Canadian newsprint producers themselves have not been pressing the price rise angle very strongly of late, being more concerned with production problems.

Actually, unless and until such time as present tax rates applying to the pulp and paper companies are revised any further increase in price would have only limited effect on earnings of the bigger companies. Inasmuch as some publishers have indicated strong opposition to any further price increases, the Canadian companies have been seeking to restrain customer goodwill so far as possible.

There is some basis, however, for further upward price change. At the time the two price advances of the last year were announced, it was indicated by Canadian authorities that neither increase was considered fully adequate to meet higher costs. Also, newspaper publishers, with advertising up substantially, have been receiving, on the whole, higher revenues this past year.

Sorg Manager Resigns

● Wayne Pendleton, recently appointed Sorg Paper Co.'s resident manager at Vancouver, B. C., home office of their Port Mellon, B. C., mill, has resigned to undertake some special work for other interests, said to be allied with the lumber industry on Vancouver Island. He was formerly manager of Straits Lumber Co. at Nanoose Bay. His father and brother, Brooks Pendleton, are with the Mohawk Lumber Co., New Westminster.

Lt. Commdr. Chapman Ends Long Service On Saratoga

● Lt. Commdr. Kenneth Chapman, former chief chemist, Everett, Wash., mill, Pulp Division, Weyerhaeuser Timber Company, went east recently to join another ship after a long term of duty on the U. S. S. Saratoga. He went aboard the Saratoga in March, 1941, and when he left, after seeing considerable action in the South Pacific, only two officers aboard had longer service on the carrier.

Lt. Commdr. Chapman had leave in February with his family in Everett. He was chemist at Anacortes, Wash., pulp mill before joining Weyerhaeuser.

Camas Couple Killed

● In a mystery automobile accident on March 12, the bodies of Mr. and Mrs. Floyd Gallagher, in their automobile, were recovered from the 18-foot deep waters of Lackamas Creek near Camas, Wash. Mr. Gallagher had been an employee of the Crown Zellerbach Corporation in the Camas mill for nine years. He worked in the order department. His wife, nee Priscilla Rennie, was a teletype operator. They were married last December.

Investigation at the scene of the accident led police to conclude that another automobile had been involved in a collision at the spot where the Gallaghers were believed to have been killed.

Camas Man On Visit

Lawrence Anderson, former sulphite mill employe at the Camas, Wash., mill of Crown Zellerbach Corp., recently visited the mill while on a thirty day leave from the South Pacific, en route to Philadelphia. He joined the U. S. Navy in September, 1941, and now has the rating of water tender first class. Anderson refused an opportunity to get a commission, in order to get into action. He has participated in seven major battles, including the Tarawa engagement. This is his first leave in the U. S. since joining the service.

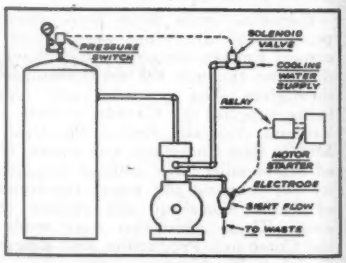
Slane On Mill Visit

Collins Slane, home on a thirty day leave from Alaska, where he has had considerable service as a storekeeper in the Navy, returned to the Pulp Division, Weyerhaeuser Timber Co., Longview, Wash., for a visit with his former fellow workers. He was in charge of the storeroom in the pulp division during his civilian days.

New Johnson Control For Water-Cooled Compressors

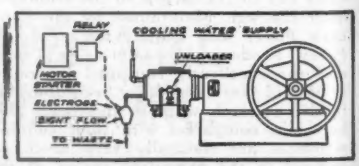
● To protect water-cooled compressors against the damaging overheating that results if operated without cooling water, and at the same time to prevent unnecessary and costly waste of water, the Johnson Corporation of Three Rivers, Mich., has developed a new compressor control. By permitting the compressor to operate only when water is actually flowing through it, this control guards against failure of water supply from any cause whatsoever, and consequently permits the safe use of automatic water cutoff valves.

The new Johnson control consists of a sight flow fitting, mounted in the water discharge pipe of the compressor, which serves as a holder for a metal electrode.



Type M Compressor Control

Pressure switch on receiver opens solenoid valve to admit cooling water to compressor. Compressor is not started until water flows through it into sight fitting, and completes circuit with electrode. If water supply fails compressor is stopped. When receiver is satisfied pressure switch stops compressor and closes valve simultaneously.



Type U—For Unloading Compressors

Compressor will not start until water actually flows through it and into sight fitting, to complete circuit with electrode. If water supply fails for any reason, control either stops compressor or sounds warning alarm.

How to Write LONG LIFE into Conveyor Belt Specifications

PIONEER RUBBER MILLS
353 SACRAMENTO ST., SAN FRANCISCO, 11, CAL.

PIONEER
Job Tailored CONVEYOR BELTS

Inland Empire Wages Up

● The Inland Empire Paper Company, Millwood, Wash., in late February was granted authority by the WLB to increase wage rates in keeping with the general raise and other provisions affecting labor relations which was earlier granted to members of the Pacific Association of Pulp and Paper Companies. Because this company is a non-member its petition had to take the delay which accompanied all independent applications. The increase added generally 5c an hour, or in some instances 7½c, to the standard rate it had been paying, and contained a provision of retroactivity to June 1, 1943.

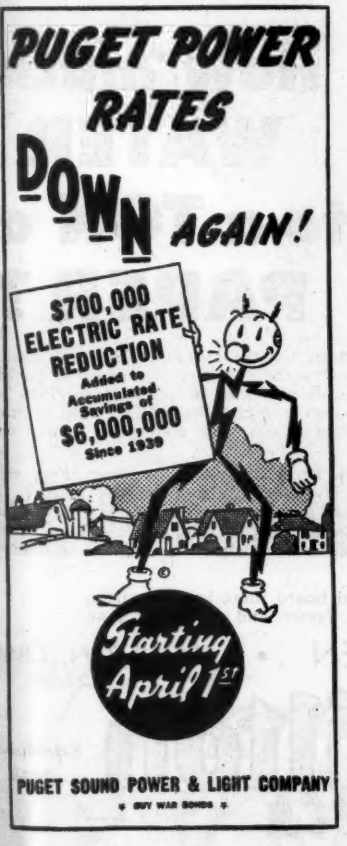
Air Corps Lieutenants

Two former members of the Crown Zellerbach Camas, Wash., mill personnel have received air corps commissions as lieutenants. They are Edward Tracey and Theodore Tracey, both of whom enlisted shortly after a third brother, Robert, was killed in a plane crash in Oklahoma early in 1942. All three of the boys were Crown Zellerbach employes.

Lt. Edward Tracey is an instructor at Merced, Calif., Lt. Ted Tracey has been assigned to a pursuit group for overseas service.

John Nunn Dies

John W. Nunn, for the past 15 years associated with Vancouver Pacific Paper Co., at Vancouver, B. C., died March 6 in Toronto while on a business trip. He was well known in British Columbia business circles.


PUGET POWER RATES
DOWN AGAIN!
$700,000 ELECTRIC RATE REDUCTION
Added to Accumulated Savings of $6,000,000 Since 1939
Starting April 1st
PUGET SOUND POWER & LIGHT COMPANY
BUY WAR BONDS

Longview Fibre Co. Personnel Changes

● Recent personnel changes at Longview Fibre Company, Longview, Wash., have materially altered the operating front at that plant.

Foremost was the retirement of W. E. Thompson after 17 years service with the company as superintendent of construction. Because of his long record, and the esteem which he had created among those who served under him, Mr. Thompson was honored by a get-together of his men by way of a farewell and was presented with a set of fly fishing tackle.

C. J. Ragsdale, former assistant to Mr. Thompson, has taken over as superintendent of construction.

Another shift has transferred Doug Cairns, former head of the paper order department at the plant, to the San Francisco office. His place in the paper order department has been filled by Tom Mendenhall.

Paul Teece of the log department has left, and his place is now filled by Arvid Peetes.

Chicago Can Have Milk In Paper Cartons

● It is well known that political manipulations and considerations have prevented wider use of paperboard in milk containers throughout the United States and Canada. Glass bottle interests have stymied the march of progress in more than one community.

But whatever the grounds for a Chicago city ordinance preventing sale of milk in paper containers, the war has changed the picture. The city council has amended the ordinance permitting sale of milk in paper cartons for the duration and six months.

WANTED: Statistician with paper mill experience to compute our daily machine and pulp production, take inventories, etc. Must be capable of taking complete charge of department. Must be draft exempt. Reply Box 6, Pacific Pulp & Paper Industry, Seattle 4, Wash.

FOR SALE: 2 Only Standard 48" Sumner Chip Crushers complete with Steel Arbor, Steel Disc. Spout and 30"x 11" Driving Pulley. All in first class operating condition. Reasonable price. Contact Purchasing Department, Weyerhaeuser Timber Company, Longview, Wash.

ENGINEERING DRAFTSMAN for development of equipment layouts and industrial plant buildings. Permanent position for right man. Location Pacific Northwest. State salary required and give complete details of experience, education and draft status. Reply to P. O. Box 111, Port Angeles, Washington.

Albert Merrill Celebrates

Albert D .Merrill, vice president of Chemipulp Process, Inc., Watertown, N. Y., and a twin himself, became the grandfather of twins on March 10. The girl twins were born to Martin O. Garnsey and his daughter, Mrs. Fonta Garnsey of Watertown. Now he has six grandchildren.

"Twins seem to reoccur every other generation," explained Mr. Merrill. "We've had seven pairs in our family that we know of."

MECHANICAL ENGINEER for industrial plant design. Should have thorough general knowledge of plant design problems and preferably of Pulp & Paper Mills. Should be fully capable of making layouts for equipment, piping, etc., computing requirements and specifying equipment and materials for such layouts and for auxiliary services such as steam, air, liquids or gases. Permanent position for right man. Location Pacific Northwest. State salary required and give complete details of experience, education and draft status. Reply to P. O. Box 111, Port Angeles, Washington.

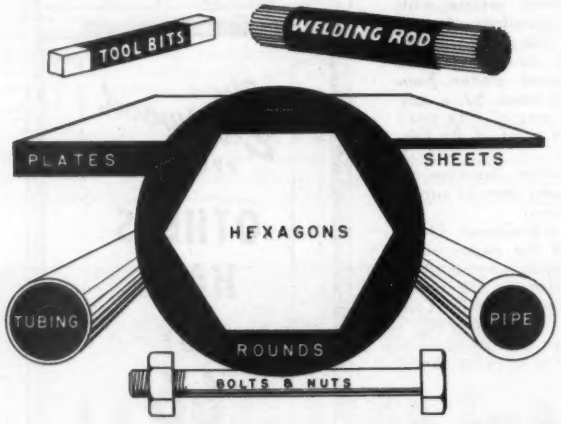
WANTED: Personnel assistant or Interviewer. Have keen understanding of people and paper industry job relations. Box 5, Pacific Pulp & Paper Industry, 71 Columbia St., Seattle 4, Wash.

Rammer Active In Group

● One of the offshoots of the Army-Navy Paper Requirements Conference of last fall in Chicago, sponsored by TAPPI, is a meeting held every six weeks of the weatherproof fiber box group, representing manufacturers of V-cases. The group meets to consider specifications and devise ways of improving the V-cases which are of great importance to the army and navy.

Hy Rammer, chief chemist, Fibreboard Products Inc., who wrote an article on development of the V-cases for the August, 1943, issue of PACIFIC PULP & PAPER INDUSTRY, has been an active participant in these meetings.

STAINLESS STEELS



The most complete stock in the country of 18-8 SMo Stainless sheets, plates, bars, tubing, pipe, in sizes and gauges required for

PULP MILL NEEDS

Ample plant facilities for casting stainless and fabrication of both cast and rolled stainless into special equipment.

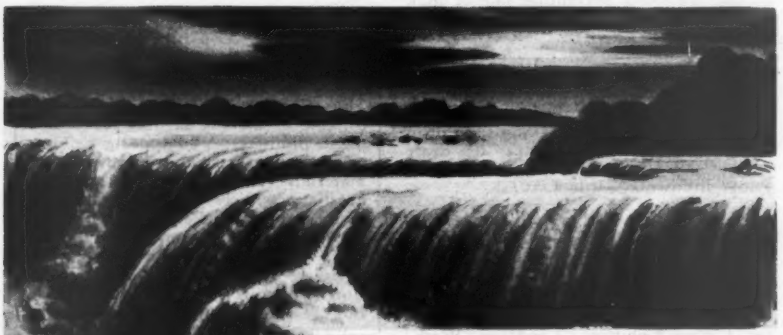
War agencies are now making stainless available for pulp mills in renewing and adding to existing equipment. Our engineers are ready to serve you.

ELECTRIC STEEL FOUNDRY

2141 N. W. 25th Ave.
PORTLAND

ESCO

2724 First Ave. South
SEATTLE



How much WATER to a TON of PAPER?

The convenient formula of 100 to 1 does not begin to tell the story. Rivers and lakes of water float the logs from the forests. Millponds carry them to the conveyors at barking mills. They are ground on millstones under streams of water or reduced to chips and converted into pulp in huge digesters filled with water and chemicals. The pulp is rinsed in water before being dried and lapped. It is again mixed with water and flowed onto the Fourdrinier wires.

At this point the process of separating the fibers from the water becomes more complicated and more exacting. And here is where Hamilton Felts enter the picture. By removing the water quickly and retaining the fiber in uniform distribution, Hamilton Felts permit the machines to be operated at higher speeds and give better formation to the sheets. They reduce the amount of steam required at the drier rolls and the amount of broke in the finished product.

From the thinnest tissue to the heaviest board there is a Hamilton Felt that will do your work better, faster and at lower cost.

SHULER & BENNINGHOFEN • HAMILTON, OHIO

Miami Woolen Mills

Hamilton Felts

Established 1858